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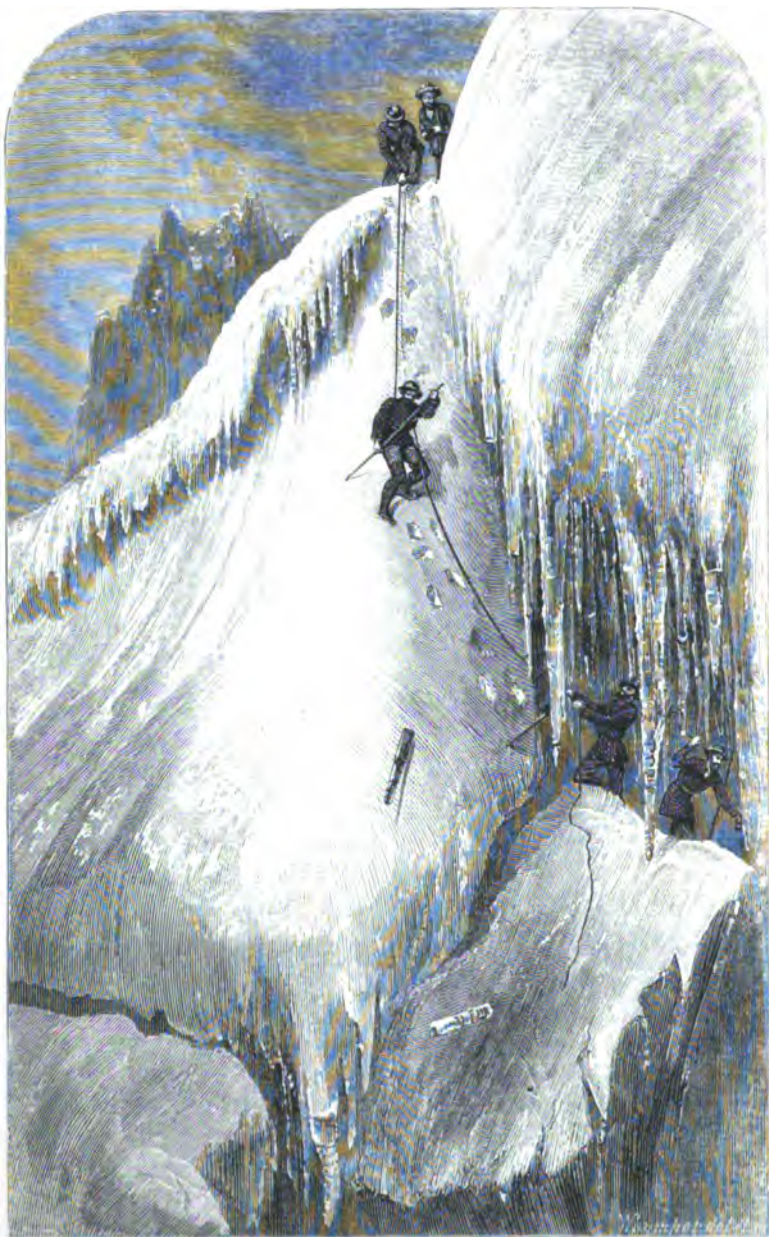
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PEAKS, PASSES, AND GLACIERS.

SECOND SERIES.

VOL. I

LONDON
PRINTED BY SPOTTISWOODE AND CO.
NEW-STREET SQUARE



ICICLE CREVASSE ON THE BERNINA.

PEAKS, PASSES, AND GLACIERS;

BEING

EXCURSIONS BY MEMBERS OF THE ALPINE CLUB.

SECOND SERIES.

EDITED BY

EDWARD SHIRLEY KENNEDY, M.A. F.R.G.S.

PRESIDENT OF THE CLUB.



*Veni aurâ ætherâ jucundum vertice montis,
Ardua respicere, et dextram conjungere dextrâ.*

IN TWO VOLUMES -- VOL. I.

LONDON:

LONGMAN, GREEN, LONGMAN, AND ROBERTS.

1862.

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PREFACE.

THREE years have passed since the appearance of the First Series of "Peaks, Passes, and Glaciers." Its publication was thought a bold experiment, inasmuch as the writers were mountain climbers and not experienced Authors. The success, however, was complete. The work evidently appealed to feelings, wide spread among the nation, and shared, even by those who had never been actors in adventures such as were narrated in the book. The favour with which the First Series was received has encouraged the members of the Alpine Club again to endeavour to interest a wide circle of readers. The taste for these adventures is becoming more extended; the Club has doubled the number of its members since the publication of their first volume, and the increase in the number of new ascents, new passes, and new adventures, involving a far wider range of exploration, have rendered necessary a corresponding increase in the number of the narratives. Thirty-two, instead of seventeen, narratives, written by twenty-three, instead of sixteen writers, is the result.

The work begins with an account of an extensive tour in Iceland, by Messrs. Holland and Shepherd, in districts, a large portion of which has been visited by no Englishman except Henderson (whose journey took place fifty years ago), since whom no stranger has traversed them, except some French travellers, under M. Gaimard, about twenty-five years ago. It is hoped that Mr. Holland's narrative of this expedition, will incite other members of the Club, still further to explore the unknown districts, to which the Vice-President last year directed attention, and that the blank in the map of Iceland may speedily be filled up. It is remarkable, that all the travellers who last year visited Iceland wish to return there, and, indeed, before these pages meet the eye of the public, Mr. Shepherd, accompanied by two friends, will again be on his way to Iceland, with the intention of making a much more extensive exploration of that interesting island.

These volumes contain no less than nine accounts of ascents of mountains never before ascended, and most of which were deemed inaccessible. The Shreckhorn, an attempted ascent of which, by Mr. Anderson, was recorded in the previous volume, was scaled by Mr. Stephen; the Aletschhorn yielded to Mr. Tuckett, after a persevering attempt, begun under most unpromising circumstances; and the Lyskamn was ascended by Mr. Hardy, accompanied by

seven other mountaineers, in addition to the guides. It seems that this last ascent may now, under favourable circumstances, be considered one of the usual first-class excursions from Zermatt, inasmuch as the difficulty of the ascent is not excessive, the view from the summit is scarcely inferior to that from Monte Rosa, and the glacier scenery equals that of any of the most formidable expeditions. The Grivola, Mr. King's description of which excited so much curiosity, was climbed by Mr. Ormsby; and its neighbour, the Grand Paradis, was ascended by Mr. Cowell, who recommends it as the finest and most feasible initiation into the glories of Alpine altitudes that can be undertaken by the mountaineering tyro. The Nord End, the only previously unreachd summit of the Monte Rosa chain, has been ascended by Sir T. Fowell Buxton and his brother. The Thierberg, near the Susten Pass, a mountain of no great difficulty, but yet never before ascended, was climbed by Mr. Forster, and may be recommended as a mountain commanding magnificent views of glacier scenery.

There now remain to be noticed, the ascents of three mountains in districts not comprehended within the usual range of Swiss tourists. These are, Mont Pelvoux, in Dauphiné; Monte Viso, in Sardinia; and the Bernina, in the Ober-Engadin. No little perseverance and skill were required to

surmount the difficulties of these mountains. Some of the inconveniences experienced by Mr. Whymper, in his ascent of the Pelvoux, may probably be avoided by profiting by his experience; but, until Dauphiné has become a more constant resort of tourists, the inconveniences arising from bad guides and execrable inns, will render the exploration of its mountains a matter of far greater difficulty than the usual Swiss climbing. Monte Viso has long attracted the admiration of visitors to Turin — it was felt that it would command a magnificent view, but it was deemed inaccessible — and Mr. Mathews' account of his successful ascent will therefore, it is believed, be read with much interest. The Bernina had been ascended by Herr Coaz, and by Herr Saratz, the President of the Ober-Engadin, but by no other person, except his guides. The ascent of this mountain by Mr. Hardy and myself, was therefore considered in the district as an event of great moment, and, as will be seen in the narrative, was celebrated by the inhabitants in an appropriate manner. The Matterhorn is now nearly the only remaining giant in the great central mass of the Alps; who still remains unconquered, and it is hoped that, this summer, he too may yield.

Ten new passes are described in these volumes, which will be found of much practical utility and interest, in enabling mountaineers to explore many

magnificent districts previously unknown, and to pass from one to another over glorious scenery hitherto unvisited.

The High-Level Glacier Route, wholly avoiding the ordinary roads, either by Aosta, or Martigny, and embracing seven of these new passes, connects the two centres of attraction, Mont Blanc and Monte Rosa.

The Col de Lys and the Col des Jumeaux afford new routes from the Zermatt district to the Italian valleys on the south of the Monte Rosa range, and the Eiger Joch connects the Wengern Alp with the Rhone Valley by the Aletsch Glacier.

The papers of Messrs. Mathews and Tuckett on the Graian Alps give, it is believed, a tolerably complete account of that little known district, and correct some important topographical errors in its received geography. Mr. Mathews has accomplished the destruction of a mountain, which has existed (in maps only) for about fifty years. Mont Iseran, a name which on the Sardinian maps has hitherto represented the culminating point of the Tarentaise, must be expunged from all maps, since its non-existence as a mountain peak is now completely proved.

A short notice is given of the various instruments used in the practice of Hypsometry, and of the methods adopted in carrying out this important branch of natural philosophy, and the result of some slight

observations upon Glacial Dirt Bands, and the unequal distribution of Ozone, is offered more by way of suggestion to future observers than as an explanation of the subject.

The work concludes with a Table of Heights, which has been compiled with great care, and, it is believed, with tolerable accuracy. So far as it extends, this Table, it is hoped, will be found a more complete list than is elsewhere to be met with of the principal Swiss and Pyrenean "Peaks, Passes, and Glaciers."

The Maps have been taken from existing authorities as far as possible; but where these are erroneous, the necessary corrections have been introduced from observations made by the traveller. They have been engraved by Mr. Edward Weller.

The illustrations are principally from sketches made by the writers themselves, and, when desirable, the routes are indicated by dotted lines. Fifty-three have been engraved under the superintendence of Mr. Edward Whymper, and three under that of Mr. George Pearson.

E. S. KENNEDY.

MAIDENHEAD: *April* 1862.

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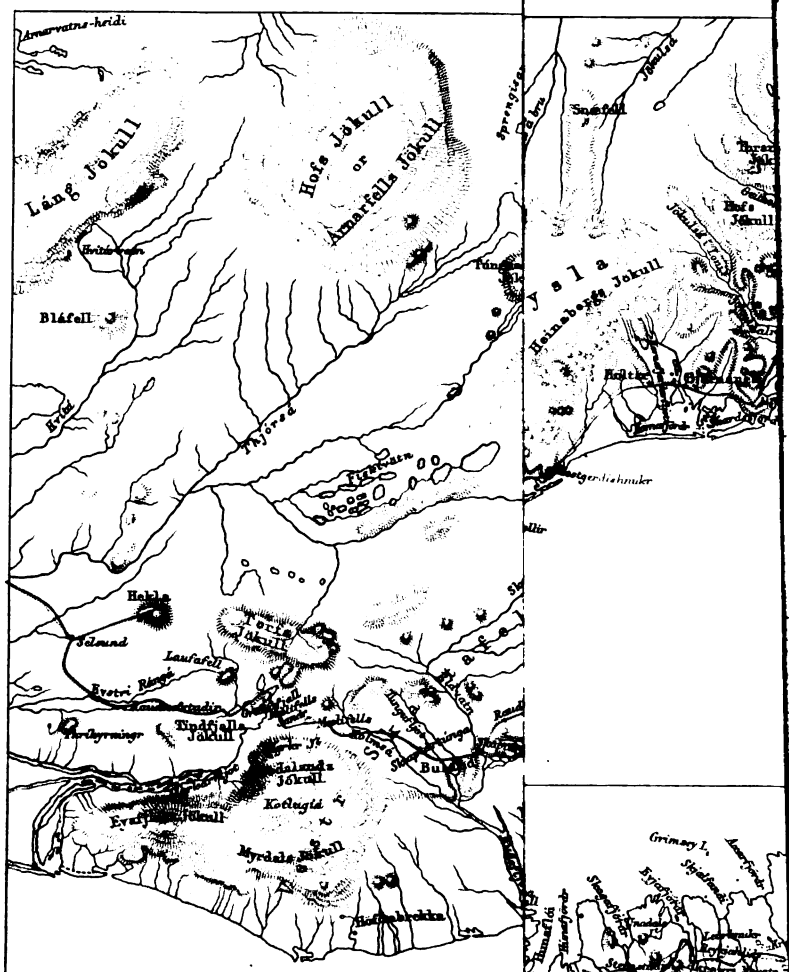
PEAKS, PASSES, AND GLACIERS.

SECOND SERIES.

CHAPTER I.

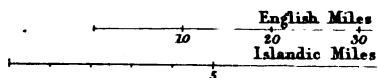
A TOUR IN ICELAND IN THE SUMMER OF 1861.

1. FROM SCOTLAND TO REYKJA-VIK, AND THENCE TO RAUDNEF-STADR.
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Map of the
SOUTH EAST
of
ICELAND

M^r Holland's Route



CHAPTER I.

A TOUR IN ICELAND IN THE SUMMER OF 1861.

By E. T. HOLLAND, B.A.

I. FROM SCOTLAND TO REYKJA-VIK, AND THENCE TO RAUDNEF-STADR.

THE screw steamer *Arcturus*, carrying the English and Danish mails, makes five or six voyages every year between Copenhagen and Reykja-vik, the capital of Iceland. On her way she touches at Grangemouth in the Firth of Forth; and at that place I, in company with my friends Messrs. Bond, Donaldson, and Shepherd, embarked on board of her on Thursday, the 18th July, 1861. The same evening she weighed anchor, and we started for Iceland.

On the morning of Sunday, the 21st, we reached Thorshaven, the chief town of Strom-œe, the largest of the Far-œes; and on the 22nd, the daylight of a northern midnight found us nearly out of sight of these islands, steering a N.W. course. On the morning of the 24th we sighted the white summit of the Orœefa Jökull, gleaming in the sun, and though some sixty miles away, looking not one half that distance from us. Then, as we steamed along, the round tops of the Myrdals, and Eya-fjalla Jökulls came into view. As we neared the coast, we came abreast of an extensive flat spit of volcanic sand, thrown out for several

miles into the sea by the Kotlu-gjá during its recent eruption in 1860. Beyond this we passed within a mile or two of the fine natural arch at Portland Head; and in the afternoon, the weather being very calm, steamed through the rocky group of Westmann Islands, and dropped the mails (consisting of two or three letters and a newspaper) into a boat, which put out for them from Heimä-ey, the largest of the group. Early the next morning we were off the low lava rocks of Cape Reykja-nes, battling with a heavy head-wind; and about 2 P. M. on that day we cast anchor in the Bay of Reykja-vik, under the lee of the Esja mountains. Not far from us two French men-of-war were lying at anchor. They had come to look after the French fishermen, who, every year, resort to the Icelandic fishing-grounds in great numbers.

We had plenty to do the next day in making the necessary preparations for our journey into the country. Guides had to be engaged, ponies to be bought and shod, and saddles to be procured, some on hire, and some by purchase, and when procured to be patched, and mended, and stuffed. Bridles, halters, girths, hobbles, had to be obtained; and not least, though last, Icelandic travelling-boxes. These are small, but awkward and weighty wooden chests, which are used by the people of Iceland for carrying their luggage when they are travelling, and which, when they are at home, ordinarily serve the double purpose of family wardrobes and seats. A baggage-horse carries a pair of these boxes, one slung on each side of him, suspended by nooses of rope, or iron rings, to two cumbersome wooden straddles, or bearers, that arch over his back; these straddles form the most important part of an Icelandic saddle. The rest of it consists merely of two large flat pads, which serve to protect the horse's flanks from being rubbed by the straddles or his load. In the

common saddles these pads are made of two or three thick layers of turf, kept in their proper place only by the grip of the straddles and the girths; in the better kinds they are made of leather, stuffed with either hair or grass. So long as these saddles are in use, the Icelandic boxes, cumbersome and inconvenient as they are, are the only contrivances that can withstand the wear and tear of an Icelandic journey.

Our preparations were not all completed until the afternoon of the next day (July 27th), but at 3 P.M. on that day we effected a start for Thing-vellir. We had with us two guides, and our cavalcade, which consisted of no less than seventeen horses, must have had rather an imposing appearance in the eyes of the small boys, who watched us as we rode out of the town.

The country between Reykja-vik and the Geysirs, and indeed the whole of that district which lies to the south-west of Hekla, has been so often described by travellers that I shall only take a passing glance at it, and refer those who wish to know more about it to the descriptions given by Henderson, Lord Dufferin, Captain Forbes, and others.

The first part of the road to Thing-vellir, after leaving the stony ground and turf bogs that surround Reykja-vik on the inland side, is pretty. On the north, you see the bold Esja mountains, looking blue in the distance — and the colouring of an Icelandic distance is remarkably soft and liquid — below them, and nearer to you, lie the bright island-spangled bays and coves of Faxa-fjördr, of which you get many a passing glimpse; while towards the south a broad stretch of moorland is bounded by the serrated ridge of hills, which extends from Hengil, near Thing-valla Vatn (the lake of Thing-valla), to the Krisu-vik district. As you leave these scenes behind, the road skirts the shores of one or two small lakes; near which are several scattered

farms, with their grass green túns (enclosures); but after a few hours' ride, you pass the last of these, and find yourself upon Mosfells-heidi,—a dreary stretch of moorland and stony waste,—which only affords enough grass to serve as a poor sheep-run for the neighbouring farms. The heidi (a word which is used, not so much to designate a heath, as an upland with scanty pasturage, or altogether barren,) rises for several miles in a gradual ascent towards the east. Then as you approach Thing-valla Vatn, it falls rather abruptly, until you reach a level field of lava, which extends along the shores of the lake. On the northern side of this lake a vast portion of the lava field has, in some former age, given way, and sunk bodily towards the lake, forming the celebrated Thing-vellir (Valley of Assembly). In this valley, for several hundred years before the first part of this century, the Icelandic Althing, or Parliament, used to meet in the open air, not only as a deliberative, but also an executive, assembly. For this reason greater historical interest attaches to Thing-vellir than to any other place in the island. Here it was, that the laws of the Icelanders, whilst yet a free people, were made and executed; here, that justice was administered, and punishments inflicted; and here too, centuries ago, it was enacted that Iceland should be no more a pagan, but a Christian, country. The valley is about five miles long by four or five miles broad: it is bounded on each side by a long deep rift or *gjá* in the lava, marking the line of separation, where in its subsidence the lower plain split away from the lava fields above it. The whole of the valley sank down *en masse*, and now lies at a level of more than a hundred feet lower than the surrounding plain. The reason of this sudden subsidence is, I believe, still a disputed question amongst geologists. Some attribute it to a fresh flow of lava over the surface of a more ancient and cavernous lava field, having by its

weight caused the first lava surface to sink from its original elevation. Others assert (with, as it seems to me, greater probability of truth) that there has been only one flow of lava, and that the subsidence was caused by the exposed crust having cooled and hardened before the depths below became solidified, and whilst the liquid stream beneath continued to flow on: the surface lava having thus lost its support, cracked and fell in, as we see ice do, when the water beneath has ceased to support it.

The track from Reykja-vík leads down into the most westerly and largest of these rifts, the Almanna-gjá (Allmans-rift), by a steep rocky defile which opens suddenly in the road. This we reached about 1.30 A.M., and descending it, rode for a few minutes along the flat grassy bottom of the Almanna-gjá, between high precipitous walls of lava, until we came to a breach in the wall on our right. Through this we passed, and riding down a green slope found ourselves at once on the banks of the river Oxerá, near to the north-west corner of Thing-valla Vatn. Here, after unloading our horses, and turning them loose to graze, we pitched our tent; and were soon in a happy state of unconsciousness of the chilling storm of wind and rain without, which for the last few hours had made our ride very uncomfortable.

August 28th.—We obtained supplies of butter and milk for breakfast from the priest, whose house stood near the Church, on the east bank of the river, opposite to our camp. At this place two of the three great highways to the north are united, and his reverence keeps a sort of hostelry, which must considerably add to his annual stipend. The clergymen of Iceland are seldom rich. They receive a small amount every year from tithes; but the chief part of their income is derived from the produce of the farms at-

tached to their livings, which in most cases brings them in a very poor pittance.

The Althing (Place of Assembly), the spot where the national assembly used to meet, is not more than a few hundred yards from the Church: it is merely a grassy peninsula of somewhat rising ground in the lava plain which surrounds it; from this plain it is cut off on every side, except the south, by deep chasms in the lava, of unknown depth, their bottoms full of clear still blue water.

On the south, the Althing is connected with the surrounding plain by a narrow causeway, which lies between two of these chasms. It was a noble meeting-place for the parliament of a free people: close at hand lay that once molten lava stream, gashed by those awful chasms, imparting a character of stern savageness to the scene, and calling forth all the severe and unyielding energies of the lawgivers; while the blue hills at the head of the valley and the island-studded lake at its foot, shed over it a calm and gentle softness, humanising the hearts and appealing to the pity of the assembled multitudes.

After having explored the classic ground of Thingvellir and the Oxerá, we proceeded in the afternoon to Laugar-dalr (Hot-spring-dale). Crossing the plain of Thingvellir, which is transected by numerous longitudinal crevasses in the lava, and covered in almost every part with low brushwood of birch and dwarf-willow, and plants of blá-berry and lyng-berry, we reached, after some four miles' ride, the Hrafna-gjá (Raven's-rift). This, like its sister-rift, the Almanna-gjá, forms a conspicuous object from every part of the plain, looking in the distance like a long dark line drawn across it. It is neither so deep nor so regular as the Almanna-gjá, but its higher side, although not a precipitous wall, was yet steep enough to oblige us to dismount and lead our horses up it. After

leaving Thing-vellir, our road lay for the rest of the day beneath a high range of tuff mountains that rose steeply on our left. The route, for the most part, was over a mere desert of scorïæ and blocks of tuff, until we came into sight of the lake of Laugar-dalr, lying in the middle of an extensive flat plain, which appears to be very fertile. From the surface of the lake, three or four columns of steam, indicating the presence of hot-springs, rose high and straight into the clear air.

July 29th. — We reached the Geysirs at 3.30 P.M., having left Laugar-dalr at 10 A.M. On our way we rode across several large flat plains, covered with an abundance of grass for the cattle and sheep of the neighbouring farms. At times the track across these plains was so deeply worn, that the surface of the ground on each side was level with our knees. These tracks are made by the horses always following one another in the same path, and are deepened by the winter rain and snow. I have seen them as deep as the top of a horse's shoulder.

About half-way between Thing-vellir and the Geysirs we crossed the Bruará (Bridge River). The bridge, which gives its name to the river, is of rather a remarkable kind, consisting merely of a few light boards, thrown midstream across a rocky chasm, down which flashes an impetuous cascade. To reach the bridge, you have to ford the stream to within a few yards of the fall across which it is thrown; from it, you have again to ford the river to its bank. The Geysirs (and there is quite a nest of them, large and small, together,) are situate at the foot of low clay hills on the north-west side of an extensive grassy plain. We pitched our tent on a grass-plot, which bore evident marks of being a favourite camping-place, close beneath the raised basin of the Great Geysir. We had scarcely done so, and put our pot of ptarmigan and plover to boil in a still hot-

spring a few yards off, when the Geysir began booming, with that sound, like a heavy cannonade heard at a distance, which always preludes an eruption. Of course we all rushed to the basin at once, thinking that an eruption was about to take place immediately; but the water only boiled up vehemently in the centre of the basin for a few minutes, and then became quiet again. So we left the Great Geysir to repose for a time; and while waiting for a repetition of his spasms we amused ourselves by giving Strokr (the Churn) an emetic in the shape of a few turf pills,—a treatment under which this fountain can generally be made to erupt. It was lucky that we had not, like a recent Icelandic traveller, trusted our dinner to its punctuality in throwing it up again; for the fountain was evidently sulky to-day, and though it boiled and churned the sods in its pipe, which was half full of water, it steadily refused to part with them.

The Great Geysir, however, kept us in a constant state of alarm by frequently boiling over: the ebullitions generally lasted from five to ten minutes and then subsided; but at length, about half-past 8 o'clock in the evening, as we were all standing on the very edge of his basin, came several reports louder than usual. Then the water in the centre of the basin immediately over the pipe suddenly rose to the height of three or four feet, and at once sank down again, but only to rise higher than before; and thus it continued rising and sinking alternately, as if thrown up by a succession of powerful jerks, until a thick column of water shot up about twenty feet, and then, rising higher and higher, separated itself into several distinct jets. These kept falling back into the basin, whence they were instantly thrown up again, thus producing a remarkably pretty effect. At length, having reached a height of eighty or eighty-five feet, as nearly as

I could estimate it, the water seemed to remain stationary at that height for about a minute, then it sank slowly, and not without several severe struggles, into its basin again. The eruption lasted altogether five or six minutes, and we were the whole time standing on the very edge of the basin. This we could do with impunity, as we were on the windward side, and the wind had sufficient force to carry the spray and steam away from us.

We stayed another day at the Geysirs, but were not lucky enough to see any further eruption of the Great Geysir, although he kept us in a state of constant expectation with a frequent cannonade. But by the united efforts of ourselves and a party of friends, Messrs. Dasent, Campbell, and Lennox (*compagnons de voyage* on the Arcturus), aided by the guides of both parties, we gave Strokr such a dose of sods and turf as set him to work to churn them and throw them up again for the greater part of the afternoon. The muddy state of the water, however, goes very far towards spoiling the effect of these continuous jets, which after a dose of turf always come up in a pea-soup coloured fountain. On the 31st July we left the Geysirs; and on the second day (the journey might be done in one day) reached Selsund, a small farm on the south-west side of Hekla, lying in an amphitheatre formed by the spurs and volcanic ridges of that mountain. In our journey thither we had to cross two large rivers, — one was the Hvitá (White River), a broad glacier stream, flowing between very high banks, to ford which is often a matter of difficulty, owing to the shifting nature of the light sands which form its bottom: the other, the Thjorsá, also a glacier river, with a deep and swift stream, across which we and our baggage were ferried in a very old and leaky boat: our horses had to swim over, — a piece of duty that they did not at all relish,

and it required the joint efforts of all our party to induce them to face the stream.

Sometimes when a river is very broad and swift, it is necessary to tie the horses all together, head to tail, in a long string, and to make them swim after a boat, the bridle of the first horse being held by a man who sits in the stern. But this plan is accompanied with some danger of overturning the boat, and is therefore seldom resorted to: the common way is to drive the horses into the river, and make them swim over loose. The hay-harvest is going on everywhere: at every boer (Icelandic farm) that we pass, the whole household are out in the tún making hay. The women are tossing it about with their hands, or loading the horses with large bundles of it; the men are mowing, or rather shearing, with their straight-handled, short-knived scythes, the curious mounds of earth, which give to every tún the appearance of an overcrowded, unkempt graveyard. These are caused, the Icelanders tell you, by the wind and wet of their winters; but whatever may be their cause, they exist, to a greater or less extent, over all the grass land in Iceland (except in ground that is always marshy), and are so universal that it is often difficult to find a spot free from them, where a tent may be pitched with any comfort.

The grass walls of the túns and turf-tops of the houses, which produce the best grass, are everywhere already mown. The hay-making season begins in June, and is not over until the latter end of September. At the beginning of the season many of the fishermen who live upon the coast migrate inland, and, attaching themselves to the household of some farmer, live with him during the summer, returning home again when the hay-making is over. A corresponding migration of the inhabitants of

the inland districts to the sea-coast annually takes place at the beginning of the fishing-season.

August 2nd.—We ascended Hekla to-day, taking as our guide the farmer of Selsund. He cannot have had much sleep last night, for he was mowing up to 1 A.M. in the morning, if not later.

We left the boer at 10.35 A.M. on horseback, and, riding up the valley of a small clear stream, soon came to the rising ground at the foot of the mountain. Our way thence lay over hills of volcanic sand and scorix, up which our poor horses had to toil with much labour, for in many places the ground was very steep. After a ride of about two hours and a half, we stopped and dismounted at the foot of a huge stream of rugged brown lava, which had flowed from the crater during the last eruption, in 1845. Here, on a barren tract of sand, we left our horses in the care of one of our Reykja-vik guides, and proceeded on foot with the farmer. We first climbed the steep sides of the lava stream, which had cooled down into the most fantastic forms imaginable. It is hardly possible to give any idea of the general appearance of this once molten mass. Here a great crag has toppled over into some deep crevasse,—there a huge mass has been upheaved above the fiery stream, which has seethed and boiled around its base. Here is every shape and figure that sculpture could design, or imagination picture, jumbled together in grotesque confusion, whilst everywhere myriads of horrid spikes, and sharp, shapeless irregularities bristle amidst them. From piece to piece of this molten ruin we had to scramble and jump; and although it took us only about a quarter of an hour to cross it, my boots were nearly cut to pieces. After leaving it, we came to a tract covered with scorix and volcanic slag, and soon afterwards toiled up a steep ascent of vol-

canic sand and cinders, where the loose nature of the ground made the walking very laborious. Half-way up this, we reached a steep slope of old snow, dirty and black, with the dust blown over it by many a summer storm,—sloppy and soft enough too, at this hour of the day; but anything was better than the ever-yielding sand. After traversing the snow, we toiled up slope after slope of sand, until we came to a ridge only two or three feet wide, precipitous on our left, and steeply sloping on our right. Along the top of this we passed, still gradually ascending, in the face of a strong wind, which had swept a cold clammy mist over the mountain-top, and hid all the landscape from us. We could not even see what was at the bottom of the precipice on our left.

As we ascended higher we found ourselves in a storm of snow and sleet, and, unfortunately, as we approached the top, the weather grew worse: it was so bad when we reached the summit (4.5 P.M.) that it was impossible for us to descend into the crater and explore it. We could only gaze over its precipitous sides at the ice which filled its bottom. After staying about ten minutes at the top, we again descended, following the tracks of our ascent; but it was not until we were half-way down that we emerged from the snow and mist. Here was the only spot from which we obtained a good prospect of the country beneath us. The view was neither grand nor beautiful, but it was strange and curious. At the foot of the mountain, lie long ridges of flat-topped hills, with sides, here steep and precipitous, there in rounded slopes, but all perfectly bare, though not wanting in contrast of colour. On the left rose a hill, red as one of the Grampians when the heather is in fullest bloom; whilst, on our right, a mountain-ridge of ashy brown ran out into the grassy flats below, and on the green plain stood warm coloured streams

of umber-tinted lava, here ending abruptly, as if suddenly cooled in their molten course,—there fading into a distant purple as they extended towards the sea. Flat plains of volcanic sand, relieved by patches of green marshes, farms, and homesteads, extended to the south, beyond which again the ocean bounded the view.

Our descent was easy and rapid: we reached our horses again at 5.20 P.M., and Selsund at 7.30 P.M., quite ready for the pot of ptarmigan, shot during our journey on the previous day.

We stayed at Selsund three days, and left it on the 5th August. On leaving it our party was divided: Bond and Donaldson returned to Reykja-vik to catch the Arcturus on her homeward voyage, whilst Shepherd and I turned our steps eastward. Before parting with our friends we divided with them our horses and the rest of our travelling stock-in-trade, which had up to this time been the joint property of the whole party. Shepherd and I took nine out of the seventeen horses as our share, and of the two guides we chose Olaver Stingrimson, who, although he was not of quite so bright an intellect as we might have wished, was a good fellow, of a most willing nature and excellent temper. Guide, however, he could scarcely be called, for of the country to the east of the Geysirs he knew as little as ourselves. But in this respect he was only like the greater number of Reykja-vik guides. There were four guides at the Geysirs when we were there, and only one of them had ever been thence to Hekla, and he only once, twenty-six years previously, when he had accompanied M. Gaimard.

The Icelandic traveller who goes out of the beaten track of travel has always to engage a fylgdar-madr or local guide to show his guide the way. But Olaver, although he was of little use as a guide, proved of great use in looking

after our horses, seeing that they were properly hobbled at night, and so on; and indeed he was almost indispensable to us in another way. Neither Shepherd nor I could speak a word of Icelandic when we set out from Reykja-vik; and although Olaver did not know half a dozen words of English when we started, yet a lingo of broken Icelandic and English was soon established between us, which after a short time he came to understand well enough; he was thus able to act as our interpreter. Danish, I may remark, is of little use to the traveller out of the principal towns. In these, which are mostly Danish settlements, it is almost universally understood. Some of the priests in the country, too, can speak it; but the people generally do not understand it.

After bidding our friends adieu, Shepherd and I started from Selsund at 10.45 A.M. We soon left the meadow surrounding the farm, and entered a rugged desert which lies on the south side of Hekla. This desert is a sandy tract, full of blocks of tuff and lava, and everywhere bearing the traces of the eruptions which have devastated it. As we rode on, the country became still more sandy. We were traversing a desolate wilderness, in which nothing grew but thin plots of mélr grass (*Elymus arenarius*). This plant is a sort of wild corn, which is often to be met with in the sandy deserts of Iceland. It seems especially to love the little hills of sand which have been blown up by the wind. The desert through which we were riding was full of these hills, and on many of them were straggling patches of mélr grass; but these scarcely relieved the feelings of desolation called forth by the scene around us.

As we proceeded we from time to time caught glimpses of the Thri-hyrningr, (the Triangle,) a fine bold mountain ridge, with three dark points of rock at its top, which serve as a landmark to the plains lying to the south and west.

Beyond the Thri-hyrningr we saw the snowy summits of the mountainous Tind-fjalla and Eya-fjalla Jökulls.

A "Jökull" is any spot that is covered with perennial ice. Henderson says that the word is derived from the Icelandic "Jaki," a lump of ice, and that it signifies an ice-mountain. This is generally true, although not always so. Any one who imagined the vast districts laid down in the maps of Iceland as Jökulls to be altogether ice-mountains would be very much mistaken. The Jökulls are often merely immense fields of ice, which in their highest parts do not rise to an elevation of more than a few hundred feet above the level of the sea. Many of them are remarkably flat, extending for miles at nearly the same level. A great — probably the greater — part of the vast Vatna Jökull, which is "supposed to fill a space of not less than three thousand square miles," consists of these icy plains; and most of the high mountains in the island have extensive low Jökulls, or ice-plains, around their bases. These low Jökulls are not glaciers, though the word is often so translated. The number of *true* glaciers in Iceland is comparatively small.

The general character of the ice even of the low Jökulls is that of *névé*, rather than that of glacier ice, — a circumstance which is probably due to the low elevation of the snow-line, and to a much less amount of pressure being exerted upon the Jökulls than upon the glaciers. The absence of such pressure arises, I think, partly from the small elevation of the mountains, and partly from the beds of the ice-fields being unconfined by the sides of hills. Where their beds are so confined, and the ice flows down a narrow valley or a mountain gorge, there we find true glaciers formed. I observed glaciers descending from many of the high mountains, *e. g.* the Tind-fjalla, Eya-fjalla, Orcefa, Eyriks, and Báld Jökulls. Most of

them came down through narrow ravines, and fell very precipitously into the plains.

About 2.15 p.m. we reached the banks of Eystri Rangá, a small rocky stream: beyond it lay before us a fine undulating country, covered with grass. Near the ford was a farm, at which we obtained a bowl of milk,—a most refreshing draught after the quantity of sand that we had swallowed in crossing the desert. Milk can be obtained at almost every farm, and no payment is ever expected for it.

After crossing the river, and riding three or four miles along its eastern bank, we reached Raudnef-stadr, our resting-place for the night.

We pitched our tent in the tún close by the house. When we had made our canvas home snug for the night, Olaver brought us from the farm a kettle of boiling water to make tea with, and we sat down to supper, using one of our travelling-boxes as a table. Our fare, though simple, was as good and substantial as we could wish. It consisted of cold mutton, skon-rock, which is a sort of rusk, and unlimited supplies of milk and butter. These last we obtained at the farm close at hand. The mutton was the remains of a sheep which we had bought at Selsund. We had paid for it four dollars (nine shillings), which, although it sounds cheap enough, is by no means a moderate price for an Icelandic sheep.

2. FROM RAUDNEF-STADR ACROSS THE LESS FREQUENTED DISTRICTS ON THE W. OF THE SKAPTÁR JÖKULL TO MARIU-BAKKI.

August 6th.—The farmer at this place is a well-to-do man, owning several hundred sheep and seventy or eighty horses. We were in want of two saddle-horses in addition

to those we already possessed. Every Icelandic traveller must (at least on a long journey) have a second horse for a change. We had not been able to procure the necessary number of riding-horses at Reykja-vik, and were anxious to supply the deficiency before we proceeded farther eastwards; for in this part of the country horses are to be had cheaper than anywhere else at the south. The farmer was quite willing to let us have one, but he hesitated to part with two. At last, however, he consented to let us have them, and he also, after some hesitation, agreed to accept their price in English gold. We had now each two riding-horses, and besides these we had three baggage-horses laden, and two extra baggage-horses running loose. We found that our newly purchased horses were out in the pasture lands, and that they had not only to be brought in, but also to be shod before starting. We therefore sent forward our baggage and loose horses, the slowest part of our cavalcade, under the charge of our fylgdarmadr,—we ourselves remaining behind to bring on our new horses. Whilst they were being caught, the farmer invited us into his house to take coffee. By the time that we had finished it, our horses had been driven up to the door, and the farmer at once threw off his coat and went to work to shoe them. Almost all Icelanders, from the priests downwards, are good smiths, and can put a shoe on well. The farmer of Raudnef-stadr was certainly no exception to the rule. I timed him as he was shoeing one of the horses. He pared the hoofs and fastened on all four shoes in twenty minutes,—no bad work! The shoes are always put on cold. They are generally each fastened with only four, though sometimes with six, nails; and although the work is more roughly done than that of an English smith, yet the shoes gene-

rally last well, and seldom hurt the horse's feet or cause lameness.

When our horses were shod and saddled, the farmer kindly volunteered to accompany us for a short distance, and put us in the right track, and soon after half-past nine we started under his guidance. After riding about a couple of miles, we came to a small stream of lava lying at the bottom of a steep barren hill. Here was the boundary of his pasture-grounds; and here, after bidding us a hearty adieu, and giving us full directions as to our route, he left us and turned back.

Our road crossed the lava stream, and ascended the hill above it. The ground of this hill consisted of shingle and small stones, all water-worn and rounded, and laid down on a substratum of sand, as smoothly and regularly as if the whole were the work of man. No macadamised road could have its surface more regularly laid. Everywhere the soil was quite bare. No vegetation of any kind could be seen, with the exception of patches of a bright green moss, which, growing here and there, marked the site of a spring or the channel of a water-course.

After a ride of about an hour and a half over this sort of ground we caught up our baggage-horses. Soon afterwards we came to a more rocky tract, where was a little more vegetation, though still it was very barren. We were now passing along the base of the Tind-fjalla Jökull, the lower glaciers of which appeared to be not more than an hour's walk from our path. In places these glaciers were much broken, and the bright colours of the ice shone out vividly in the sun; but on the whole, the rounded snow-slopes looked as if they would not offer much difficulty to an ascent. The top of the mountain, as seen from this side, appeared to be a flattened dome.

The streams from the Jökull came tumbling over the rugged rocks on our right in several pretty waterfalls. Two of them especially, not more than fifty yards apart, offered a beautiful contrast to each other. The one was broken and feathered in many a spray-spangled fountain, the other poured down in a broad, unbroken sheet of water. When we reached the N.E. side of the Jökull the scenery became of a very different kind; close before us lay a perfectly flat shingle plain of very large extent. The shingle in it was as smooth and regular as that on the hills which we had crossed in the morning, and the ground was quite as barren. On the other side of this plain, and rising immediately from it, were numberless mountains, one overtopping the other, as far as the eye could see. It was a fine scene. Every mountain seemed to have a peculiar shape and character of its own, and all seemed to be jumbled together in a wonderful confusion. Here, side by side, were tall pyramid-shaped mountains, and low round-topped hills; flat table-lands lying next to pointed aiguilles, and rocks riven and shattered by storms; here were gradual slopes close beneath precipitous cones which towered above them. Equally varied was their colour. There in the distance gathering clouds cast a deep shade over the hills, whilst here a golden gleam of sunshine lit up the yellow cliffs of a sand-coloured berg; and in another direction a volcanic hill showed its sides, as red in hue as a field of summer clover.

We rode on through a narrow defile with rocky sides at the end of this plain, into another valley which somewhat resembled it; and then, traversing a bare mountainous district, we reached the river Markar-fljot, which, although not very broad, was swollen and deep. After crossing the river, our road led us along the steep side of a ridge of hills completely covered with moss, and deeply

scored by numerous water-courses. In the valley, we came upon a number of very singular mounds of black sand, apparently washed down from the hills above; but they were so regular in shape that they looked like artificial structures, rather than the work of nature. The greater number resembled railway embankments, from 15 to 40 feet high, 100 to 300 feet long, and 30 to 40 feet broad at the top, and broader at the bottom. Descending from these mounds, and fording a small stream, a tributary to the Markar-fjot, we found ourselves close to Græna-fjall (Green fell), a solitary green hill in the midst of these barren tracts, in which, although we had been riding for nearly six hours, we had scarcely seen a blade of grass. A mournful bleat revealed to us a flock of sheep, feeding on this solitary oasis. Leaving Græna-fjall behind us, we again entered a barren desert, which must lie at a considerable elevation above the level of the sea, for we came upon several large patches of old snow, still unmelted.

Soon after four o'clock, we reached a small valley, named Fangil, where there was a little grass, and where it was our original intention to have camped for the night; but we found it very uninviting. The rain had for some hours been pouring down in torrents, and had completely soaked the ground. There was little chance of our being able to make a fire. The only fuel at hand consisted of the roots of dwarf willows, and even if we could have collected a sufficient quantity of these, they were too damp to burn. There was, besides, very little grass for our horses. Under these circumstances, we determined to push on into Skaptár-tunga, a district lying in the Skapta-fells-sysla, sixty or seventy miles due east of Hekla, where we hoped to reach a farmhouse. So, after stopping at Fangil three-quarters of an hour to rest our horses and let them feed,

we mounted again and proceeded eastwards. Almost immediately after leaving Fangil, we entered an extensive desert of black volcanic sand, called Mæli-fells Sandr, bounded on the north by the snow-covered hills that flank the Torfa Jökull, and on the south by the ice-fields of the Merkr Jökull. Its width is from two to three miles, and it is about fifteen miles in length. The ice-fields of the Merkr Jökull terminate in gentle rounded declivities, which come quite down to the sand. The Jökull rises very gradually towards the south, and for a long distance appears to be almost flat. A large extent of the lower part of the ice-fields was dusted over, and dirtied with black sand blown off the plain, along which the Jökull extends for many miles in almost a straight line. For an hour and forty minutes we rode over the desert at a smart trot, and at the end of that time we reached Mæli-fell, a barren mountain of considerable size, which, until we came close to it, seemed to block up the end of the desert. At 8 P.M. we reached the banks of the Holmsá. We had expected, from Gunnlaugsson's map, to find grass on the east side of this river; instead of it we found a country green, indeed, as it is painted in the map, but green with moss only. There was not anywhere a blade of grass for our hungry horses, and for more than an hour and a half we rode across moss-covered hills and dales. At length our road zigzagged down a steep hill-side, and we entered a fine grassy valley watered by the Tungu-fljot; half an hour after crossing which we reached Bulandsel, a boer about three miles to the west of Buland. It was now 10.30 P.M., and we found the farmer and his family retired to rest; but on our arrival they at once got up to offer us all the hospitalities that the farm could afford.

We intended to have attempted an ascent of the Kotlu-

gjá. A visit to that mountain would have been particularly interesting at this time, from the circumstance of its having been in a state of eruption in the previous year, 1860. We had, however, to give up this intention; for we found that on this side of the mountain there was no place from which we could make the ascent, with sufficient grass for camping out, and to have gone to the south-east of the mountain, and returned, would have taken up more days than we could well spare. We determined, therefore, to push on eastwards at once. Any future traveller who may wish to attempt the ascent of Kotlu-gjá, should do so, I think, from the south, where there are several farms not far from its base. The mountain was, some years ago (1823), attempted from this side, with considerable success, by an Icelandic priest of the name of Jón Austmann. A less successful attempt to reach the summit was made by Messrs. Olafssen and Povelsen, so long ago as the year 1756. But they were obliged to give up their attempt, as they were enveloped in snow and mist, and exposed to the rage of the volcano, which had been seen to emit flames only two days before.

August 7th.—We rode to-day only as far as Buland, and, the following day (August 8th), proceeded to Mariu-bakki, a little farm lying on the south side of the great Skaptár Jökull, half-way between the Jökull and the sea. The country through which we passed was very different from the deserts we had traversed two days previously between Raudnef-stadr and Bulandsel. The greater part of it was a fine undulating country, well covered with grass. In crossing it, you would never have supposed that you were riding within a short distance of the most destructive of Icelandic volcanoes, one which, not quite eighty years ago (1783), devastated the whole of the country around it for many miles, throwing out such masses of lava, that

the molten flood at that eruption from this single volcano was, it has been calculated, greater in bulk than Mont Blanc itself. Henderson (pp. 219—231) gives a most interesting account of this eruption, describing with graphic detail the phenomena that appeared day by day. I make no apology for quoting the following passage from his description of it. He says, writing in 1815 —

“It not only appears to have been more tremendous in its phenomena than any recorded in the modern annals of Iceland, but it was followed by a train of consequences the most direful and melancholy, some of which continue to be felt to this day. Immense floods of red-hot lava were poured down from the hills with amazing velocity, and, spreading over the low country, burnt up men, cattle, churches, houses, and everything they attacked in their progress. Not only was all vegetation, in the immediate neighbourhood of the volcano, destroyed by the ashes, brimstone, and pumice, which it emitted; but, being borne up to an inconceivable height in the atmosphere, they were scattered over the whole island, impregnating the air with noxious vapours, intercepting the genial rays of the sun, and empoisoning whatever could satisfy the hunger or quench the thirst of man and beast. Even in some of the more distant districts, the quantity of ashes that fell was so great, that they were gathered up by handfuls. Upwards of four hundred people were instantly deprived of a home; the fish were driven from the coasts, and the elements seemed to vie with each other which should commit the greatest depredations. Famine and pestilence stalked abroad, and cut down their victims with ruthless cruelty; while death himself was glutted with the prey. In some houses there was scarcely a sound individual left to attend the afflicted, or any who possessed sufficient strength to inter the dead. The most miserably emaciated tottering skeletons were seen in every quarter. When the animals that had died of hunger and disease were consumed, the wretched creatures had nothing to eat but raw hides, and old pieces of leather and ropes, which they boiled and devoured with avidity. The horses ate the flesh off one another, and for want of other sustenance had recourse to turf, wood, and even excrementitious substances, while the sheep devoured each other's wool. In

a word, the accumulation of miseries, originating in the volcanic eruption, was so dreadful, that in the short space of two years, not fewer than 9336 human beings, 28,000 horses, 11,461 head of cattle, and 190,488 sheep, perished on the island."

Immediately after leaving Buland we came to the banks of the Eld-vatn (Fire-water), a deep river of glacier water which flows down from the Skaptár Jökull in a channel of lava, and is divided into many streams by numerous lava islands. It owes its name to having first made its appearance during the eruption of 1783. We did not find much difficulty in crossing it, and having reached its eastern shore, we had before us a steep ascent up a high bank, up which our road lay by a zigzag path, and at the top of which we found a fine broad plateau of marshes and grass lands. After traversing these we came to a beautiful undulating country, lying amongst green hills, down the sides of which many a silver thread of water flashed in the sunlight, and here and there, in the far distance, we caught glimpses of the blue ocean. But even here, in the midst of this beautiful country and these grassy lands, has the fire-demon left some traces of his work. In the middle of a green plain we came upon an isolated hill, which was evidently of volcanic origin. It was in shape a perfect cone, and its steep sides were covered with scorice of a most brilliant red colour. From this last peculiarity it takes its name of Raud-holt (Red-hill). It is quite barren, and on every side of the same red colour, except on the south. On that side, near the top, is a patch of black cinders. The position of this hill is also very remarkable. It stands in a broad natural foss, which runs round it on three sides, cutting through and exposing the brown soil of the pasture lands to a considerable depth. On the other side it slopes down to the grassy plain at its base.

In the afternoon we descended from the high ground upon the village of Kirkju-bœr, and thence proceeded to Prest-bakki, over a rich plain, well stocked with cattle



RAUD-HOLT.

and sheep, belonging to the numerous farms scattered about it. Here we halted for half an hour to let our horses feed. We had scarcely dismounted when the priest, whose house was some little distance off, came out to us, although it was raining heavily at the time, and pressed us to come in and take coffee. We gladly accepted his invitation and followed him indoors. He talked Latin well (a compliment which I cannot pay to most of the Icelandic priests), and we had a long conversation with him in that language. He told us, that in the previous May, 1861, there had been, for several days together, a strong and nauseous sulphureous smell throughout the whole of this district, which he attributed to some volcanic disturbance having occurred farther eastwards. Dr. Hjaltelin, of Reykja-vik, and others, subsequently informed me that a sulphureous smell had

about the same time been prevalent in the houses at Reykja-vík, to such an extent as to be very disagreeable; and that in the district near the Vatna Jökull the sulphureous vapour had tarnished all the silver in the houses. This smell probably came from the Skeidarár Jökull, where (as I shall mention presently) there was undoubtedly some, though probably not a very great, volcanic disturbance at that time.

Coffee was handed round by a pleasant-looking woman, introduced to us by the priest as "Uxor mea." When we had finished and rose to depart, our host would not hear of our going without his riding with us a short way. So he ordered his horse to be saddled, and accompanied us, although it was still raining. Friendly as was his intention, we had soon reason to regret that he had come with us. He either imagined that we had acquired an Icelander's love for imbibing coffee, or he was very anxious that all his friends should have the opportunity of seeing us. We had scarcely ridden a mile when he pressed us to go and take coffee with his father, a clergyman living about a mile up the valley, and we had not ridden more than three miles farther, when he took us up to another house, which he said was his brother's. He went in and brought the owner out to us, and they both together pressed us so earnestly to dismount and take coffee, that it would have been discourteous to refuse. We were kept waiting upwards of an hour whilst the coffee was being prepared, sorely grudging the loss of time, and, to judge from my own feelings, in no very amiable mood. From some cause of delay, known only to the members of the culinary department, it took all that time to get ready. "*Experientia docet.*" Always after this, when pressed to take coffee at a way-side house, we asked for milk, or cognac, or schnapps, instead; thus at the same

time neither offending against Icelandic ideas of courtesy, nor losing much time by delay. Reader! If you ever travel in Iceland, take my advice and do likewise.

When at length we had finished our coffee, we set out again; the priest accompanied us for a mile or two, and then, bidding us a pleasant journey, he turned his horse's head homewards. Between 7 and 8 P.M. we reached a field of lava, part of the immense flow which descended in 1783 from the Skaptár Jökull. Across this our road led us for some distance, and as it was now getting dark, the riding here became both disagreeable and difficult. Shortly before 9 P.M. we reached the Hverfis-fljot, a broad and rather deep river, in which, however, the stream was not very strong. The bottom is sandy, but in most places we found it firm, and we got across it without much difficulty. From the Hverfis-fljot we had a pretty good road to Mariu-bakki, which we reached shortly after 10 P.M. The people at the farm had all retired for the night; but, upon our arrival, they at once got up and provided us with all that we wanted for our supper.

3. PASSAGE OF THE SKEIDARÁ.—THE ORCEFA JÖKULL— SOUTH OF THE VATNA JÖKULL TO BERU-FJÖRDR.

August 9th.—We were rather delayed in our start this morning by awaiting the preparation of an Icelandic dish, which Olaver had strongly recommended to us, but which turned out to be nothing more nor less than rice boiled in milk, with the addition of a few raisins. Whilst we were at breakfast, Olaver came up with a long face to tell us that the Nups-vatn was a very dangerous river, and that the farmer of Mariu-bakki was the only person thereabouts who could guide us over it and the Skeidará to Svina-fell; and

"he charges," said Olaver, "six dollars (13s. 6d.) for the journey." At the time we thought this rather an exorbitant demand,—the ordinary charge for one day's journey and back being four dollars (9s.) But since there was only this one guide we had no choice. When, however, we had come to the end of our day's journey, we had no reason to think that he had taken any advantage of us. The extraordinary difficulties and dangers quite justified him in making an extra charge.

After bidding our adieus to the inmates of the farm,—Olaver and the farmer embracing every one of them, men, women, and children, in turn, Shepherd and I, who fought shy of those dirty lips, only shaking hands with them,—we set out at 11 A.M.

Our fylgdar-madr was such a good specimen of his class, that I must endeavour to give a sketch of his general appearance. He was a short grey-haired man, elderly, but still active, and, to judge from the pair of grey eyes that twinkled beneath his shaggy eyebrows, he still retained much of the energy of bygone years. As is the custom of Icelanders when they go away from home, he was dressed in his best suit of clothes, having on the dark woollen trowsers and short jacket worn by the country people, home-made and home-dyed, and on his feet a pair of home-made skúar, or Icelandic shoes. These, which are the shoes commonly worn by every one, are like slippers in shape, and are made either of ox-hide or sheep-skin, and bound round the ankle with strips of hide. His neck was wrapped round and round by the thick folds of a red woollen comforter, and his head was crowned by a low broad-brimmed beaver hat, which, if it ever was black, had long since assumed a mournful washed-out hue, and looked old enough to have seen the last fifty Icelandic winters with its wearer. He was mounted on a low sturdy

little cream-coloured pony, and he dragged along behind him by a halter his second horse, which showed great unwillingness to leave the grass of the tún. Olaver's long-drawn face plainly showed that he was not over pleased with the accounts that he had heard at the farm of the difficulties before us. It was only by frequent applications to his snuff-box, that almost invariable companion of every Ice-lander, that he could at all preserve his equanimity; and when, after an hour and a half or two hours' ride we had passed round the base of Loma-gnupr, and saw the broad river Nups-vatn rushing by, only a few inches below the ground on which we were riding, these applications became almost incessant. Loma-gnupr is the last and finest of a range of steep hills, which extend from Kirk-ju-bær to the Skeidarár Jökull. It stands out quite by itself from the line of these hills, and looks like an enormous square fortification; its dark tuff rocks beetling above the plain beneath to the height of more than 2000 feet, and presenting on its south and east sides very noble precipices, sheer down from its summit to its base.

Having reached the Nups-vatn, which flows in a great number of channels through a plain of volcanic sand, we crossed several of its inferior branches, and reached a large sand-bank, washed by the principal stream. Here we halted to tie the horses head to tail, as is always done when crossing a difficult or dangerous ford, and to put the baggage as high as possible on their backs, out of the reach of the water. These preparations having been completed, the guides moved off into the water, bidding us remain where we were until they had discovered a good fording-place, for the treacherous quicksands over which this river flows are continually shifting their position, and where you might have crossed safely yesterday, to-day you

may be engulfed, perhaps inextricably. We therefore lighted our pipes and sat down on the sand to watch the progress of our guides. They started, each of them with two baggage-horses in tow, the farmer leading the way. First they crossed a side channel, and made for a sand-bank a little higher up the river than that on which we were. From this they at once entered the main stream of the river. Although the Nups-vatn is deep, and its stream strong, it is neither its depth nor its strength, but the quicksands which make it difficult and dangerous to cross. The farmer is well aware of this, and urges on his little cream-coloured horse into the stream with great caution. Cautiously does the horse feel his way step by step, as he slowly advances, pressed on by the ever-urging heel of his rider; but all this caution is of no avail: all at once down goes the horse, head and ears disappearing beneath the muddy waters. A splash, a struggle, and a bound forwards, and the cream-coloured head again just shows itself above the surface, but the horse's hind legs are fast held in the sandy bottom. He struggles in vain to free himself. The farmer has to dismount, waist deep in water, and tug him out by main strength. Then back they come wading the stream together, until they have regained the sand-bank from which they first set out, and to which Olaver has already turned and fled. The fylgdar-madr again mounts his gallant little steed, and makes a second attempt lower down the stream. Both the man and the horse evidently enter it this time with more hesitation than at first, but both working together and understanding each other in a wonderful manner. Here, as the wary rider cautiously urges on his horse, the sagacious little animal refuses to proceed, and only paws the ground beneath his feet in answer to his master's commands; and the fylgdar-madr lets him have his own way, and turns his head down stream to try

another place. There, where the horse appears equally reluctant to proceed, the fylgdar-madr urges him on with whip and heel, and they pass on in safety. The other horses follow. Thus they slowly and with difficulty progress, trying at every step the ground before them. At last they reach the opposite bank in safety. But it was terribly trying work for the poor horses, for first one and then another (although, from being tied together, they must have been almost following each other's footsteps,) almost disappeared in a quicksand or hole. Sometimes they managed to extricate themselves; at other times they had to be dragged out by the string of horses to which they were attached. The state of mind with which Shepherd and I looked on at this scene may easily be imagined, when I mention that we saw our tent, bedding, saddle-bags, and boxes containing biscuits and other necessities, all, one after another, partly or totally, disappearing under the water.

Leaving the baggage-horses on a sand-bank, separated from the opposite shore of the river only by a narrow stream, the fylgdar-madr and Olaver rode up the river, trying in several places to ford it back to where they had left us. They did not like again to face the place that they had just crossed, and did not succeed in discovering any good ford until they had ridden about three quarters of a mile further up.

Meanwhile a fresh cause of delay had arisen. One of the loose riding-horses, which had been left to await the return of the guides, after looking for some time at the passage of his companions, the baggage-horses, apparently came to the conclusion that the ford was too bad to be attempted; so, deliberately turning tail to the river, he started off at a swinging trot back towards Mariu-bakki. I started after him; but finding that the nearer I approached him the faster grew the pace, and

having in vain tried to stop him by imitating the whistle which the Icelanders use to their horses, I left him to his own ways until the guides returned. On coming back they were naturally not very well pleased, and appeared in doubt how to act; until, after their snuff-boxes had been many times in requisition, and they had wasted ten minutes in words, they came to the conclusion that most men would have come to at once,—namely, that one of them should take the fastest horse that we had, and ride after the runaway. He had not in the least slackened his pace, and was just disappearing round the corner of Loma-gnupr when the farmer started after him. During his absence we went to the place where he and Olaver had recrossed the river, and waited his return. He joined us before very long, bringing back the deserter, and we all entered the river together, he leading the way. For about half an hour we were wading through the water, which was sometimes up to our saddle-girths; at others almost covering our knees. Our horses were now walking over a firm bottom, now blundering through a quicksand, now struggling amongst sand-holes. We reached the eastern bank of the river, however, without any mishap, and found our baggage-horses still standing on the sand-bank where they had been left. After untying them from one another, we started across the desert Skeidarár Sandr, which lay before us.

The Sandr is a broad tract of level sand, extending for many miles along the sea-coast beneath the Skeidarár Jökull. This is by far the most remarkable Jökull that I saw. Every part of it is completely black, and would probably, at first sight, be mistaken for rock. It is terminated abruptly by an icy precipice, which, like a vertical wall, stands up from the flat Sandr, along its whole length, to the height of from twenty to forty feet.

As we approached the middle of the Sandr, we heard, in front of us, the roar of the Skeidará. This river has recently changed its position considerably from its former course, as laid down in Gunnlaugsson's map. Perhaps it would be more correct to say that the old Skeidará has ceased to flow, and that a new river has burst out from a different part of the Jökull. The old course of the Skeidará, which was at the east end of the Skeidarár Sandr, is now marked by only a few inconsiderable streams. The new Skeidará flows from the centre of the Jökull. This change took place in May 1861, at which time there evidently was a volcanic disturbance somewhere in the interior of the Vatna Jökull. No volcano, however, is known to exist in these unexplored regions, which still retain their mysterious character, and it is to be hoped that before long a well-organised expedition may penetrate the hitherto untrodden expanse. Not only did a strong sulphureous smell, as I have before mentioned, then pervade the whole of the country to the west of the Vatna Jökull, but there was also an eruption of water from the Skeidará Jökull. Such volumes of water were poured forth from the south and south-east ends of this Jökull, that the whole of the Sandr beneath it was covered with one broad flood, and, for many days, rendered impassable.

Unfortunately there was no one near the spot to note the phenomena of this water eruption. I could learn little about it, except the fact that the Skeidarár Jökull had flooded the whole, or nearly the whole, plain with water and ice.

It happened, however, that a party of Englishmen, on their way to Iceland, in the beginning of June, fell in with a stream of this water at sea, about eighty miles off the coast. They appear to have at once dis-

tinguished it from the sea-water by its colour; and they sailed through it for thirty miles. This proves that the eruption of water must have been very great. A letter from Mr. Hogarth, one of the party, giving an account of the meeting with this stream, will be found in a note at the end of this paper.

When we came in sight of the Skeidará, the roar of whose waters we had heard for a considerable distance, we saw a broad sheet of murky water, rushing across the sandy plain with indescribable velocity, the waters appearing to be raised above the level of the ground on which we stood. Over the whole breadth of the stream,—either from the velocity with which it rushed before our eyes, or from the clouds of spray that flew upwards from the breaking waves,—there was an indistinct mistiness, such as is often seen in the heat of a summer's day hovering over the ground. The river has become much more formidable and dangerous since it shifted its position. The prospect of crossing certainly was not pleasant, even when we only heard its roar from a distance, and looked from far off on its waves leaping and gleaming in the sinking sunlight. But when we reached its shore, and stood close by the rushing river, with its roar in our very ears, and its angry waves racing by at our feet,—when we saw in it the large masses of broken ice which were being carried down from the Jökull and hurried swiftly past us,—when we heard these crunching and grating, as they bumped against the stones or over the shallows with a loud harsh sound, distinctly audible above the noise of the rushing waters,—then the river did indeed look formidable, and it seemed almost madness to trust ourselves to its fury. But there was no alternative: the only way to get across was to ride through it.

We reached the bank of the river at a distance of not more than 200 yards below the Jökull, and halted to make the necessary preparations for crossing. The horses were tied together, head to tail, in the usual manner, and the baggage was securely fastened high up on their backs, as much out of the reach of the water as possible. Whilst the guides were engaged in making these preparations, Shepherd took his gun, and stalked two great northern divers, which were swimming about in a pool of glacier water close by. I meanwhile walked up to the foot of the Jökull, in order to investigate the cause of its intense blackness. Many of the Icelandic Jökulls are in close proximity to large plains of volcanic sand, and the lower portions bordering on the plains are often dirtied, over a large extent of the surface, by the black sand blown upon them. But the colour of the ice beneath remains unchanged, and generally shows itself in white patches here and there; and that part of it which is dusted over assumes a dark grey, rather than a decidedly black colour. Moreover, in such cases, wherever you can see far into the interior of these Jökulls, you find, as might naturally be expected, that those parts which are nearest to the sand-plains are darker than those which are more remote. In almost every Jökull that I saw thus discoloured, the white ice of the interior retained its natural whiteness, and was merely set in a border of a darker colour. But the appearance of the Skeidarár Jökull was very different. Every part of it that we could see was quite black. I came to the Jökull just at the spot where a tributary stream of the Skeidará rushed out of a dark cavern in the ice. The roof and sides of this cavern were of the same jet black hue as the surface of the Jökull. My riding-whip was the only instrument at hand with which I could break the ice. With it I could not do more than

chip off the angles of the projecting masses. But this was enough to convince me that the sand and grit were frozen into the ice, and not merely lying upon its surface. How far the mass of the Jökull was thus impregnated with sand I had no means of discovering. It looked as if its whole body was thus discoloured. The ice in the blocks which had become detached from the Jökull and had fallen on the plain seemed black throughout, and not merely coated with sand grit; and this was my impression after examining several of them. If I am right in this belief, the whole Jökull was probably impregnated with black sand in the same way; and this would account for the difference of its appearance from that of every other Jökull I saw.

It is difficult to account for this entire impregnation of the mass with black sand, on the supposition that it arose only from the sand having been blown over it; for in that case there would have been some white ice visible in the fissures and caverns, at least. The only solution that occurs to me, is that some volcanic eruption in the interior of the Jökull, similar to that which occurred in May, 1861, showered down an enormous quantity of sand and cinders on the snow before it became ice, and that the process of alternate melting and freezing, which converts snow into ice, carried the sand into the very heart of the Jökull.

On my rejoining the rest of the party, we all mounted, and at once moved off to attempt the passage of the river. The farmer, who had exchanged his second horse, which he had ridden from the Nupsvatn, for his favourite cream-coloured water-horse, led the way; zigzagging from sand-bank to sand-bank across two or three lesser streams, we soon reached the shore of the main channel. After a moment's halt the guide rode on into the stream.

Scarcely had his horse advanced half a dozen steps into the water, when the force of the current all but swept him off his legs, and the guide had to turn him back to the shore. Finding that it was impossible to ford the river at this point, we left the island sand-bank upon which we were, and rode down stream through the water for some distance, picking our way through the shallows as well as we were able. We proceeded in this way for some distance without being able to find any place where the river appeared at all practicable.

At length we came to a shallow, where our guide pulled up to take a survey of our way. The water here was up to our horses' girths, and very swift; but it served as a sort of resting-place in the midst of the deeper waters round it.

Having satisfied himself as to our route, our guide again urged on his horse through the stream, and led the way towards the mid channel. We followed in his wake, and soon were all stemming the impetuous and swollen torrent. In the course of our journey we had before this crossed a good many rivers more or less deep; but all of them had been mere child's play compared to that which we were now fording. The angry waves rose high against our horses' sides, at times almost coming over the tops of their shoulders. The spray from their broken crests was dashed up into our faces. The stream was so swift, that it was impossible to follow the individual waves as they rushed past us, and it almost made one dizzy to look down at it. Now, if ever, is the time for firm hand on rein, sure seat, and steady eye: not only is the stream so strong, but the bottom is full of large stones, which your horse cannot see through the murky waters; if he should fall, the torrent will sweep you down to the sea — its white breakers are plainly visible as they run along the shore at scarcely a mile's distance, and they lap the beach as if they waited

for their prey. *Happily*, they will be disappointed. Swimming would be of no use, but an Icelandic water-horse seldom makes a blunder, or a false step.

Not the least of the risks we ran in crossing the Skeidará, was from the masses of ice carried down by the stream from the Jökull, many of them being large enough to knock a horse over. Fortunately we found much less ice in the centre and swiftest part of the river, where we were able to see and avoid it, than in the side channels. How the horses were able to stand against such a stream was marvellous; they could not do so unless they were constantly in the habit of crossing swift rivers. The Icelanders, who live in this part of the island, keep horses known for their qualities in fording difficult rivers, and they never venture to cross a dangerous stream unless mounted on a tried water-horse. The action of the Icelandic horses, when crossing a swift river, is very peculiar. They lean all their weight against the stream, so as to resist it as much as possible, and move onwards with a peculiar side step. This motion is not agreeable. It feels as if your horse were marking time without gaining ground; and the progress made being really very slow, the shore from which you started seems to recede from you, whilst that for which you are making appears as far off as ever.

When we reached the middle of the stream, the roar of the waters was so great that we could scarcely make our voices audible to one another: they were overpowered by the crunching sound of the ice, and the bumping of large stones against the bottom. Up to this point, a diagonal line, rather down stream, had been cautiously followed; but when we came to the middle, we turned our horses' heads a little against the stream. As we thus altered our course, the long line of baggage-horses appeared to be swung round altogether, as if swept off

their legs. None of them, however, broke away, and they continued their advance without accident; and at length we all reached the shore in safety. From the time that we first entered the river we were about an hour actually in the water, and it cannot have been less than a mile in breadth. The Skeidará is at all times one of the most formidable rivers in Iceland; but it is not always in such a dangerous state as when we crossed it. Our guide had crossed only two days before, and he then found it comparatively free from danger. Its dangerous state was probably caused by the great heat of the previous day.

We stopped for half an hour to let our horses feed on a patch of grass at a short distance from the river, and then proceeded. The country, which lies between the present and the old course of the Skeidará, is very remarkable. We found the greater part of the Sandr honeycombed, so to speak, with innumerable round quicksand holes. The largest of these were as much as thirty feet in diameter, and from ten to fifteen feet in depth. Many of them were half filled with water, generally of the milky-white colour of glacial streams. In some of them the farmer pointed out what he said was Jökull ice underneath the water; but in most there was no water, but only wet quicksands, which bubbled up as we rode by them. These holes lay close to one another, and were separated only by narrow ridges of sand, often scarcely a foot in width at the top, but sloping outwards and widening towards the bottom. The farmer said that they first made their appearance in the month of May 1861, when the out-flow of waters from the Jökull had subsided, and he attributed their presence to the Jökull having come down unmelted underneath the sand at the same time that the water rushed out from it. I think, however, that they were caused by the melting of the masses of ice,

which were left deposited upon the plain on the subsidence of the floods caused by the eruption, and that the water coming from these masses of ice as they melted, soaked into the sand around them, and converted it into quicksands. Henderson appears to have met with similar "holes filled with quicksand" in the usual channel of the Jokulsá á Breida-merkr, which he found dried up. We did not meet with any such on the Breida-merkr Sandr.

These quicksand holes caused us much difficulty and delay; it required great caution to prevent our loose horses, which we were driving before us, from pushing one another into them, especially when several of them tried to pass along the same narrow ridge between two of the holes at the same time. At length, after riding two or three hours amongst the sand holes, we reached an extensive flat tract of sand which lay beyond them. We hoped that, upon reaching this, we should find the ground better suited for riding over; but we were disappointed, for we discovered that the surface, which here looked sound and firm enough, served only to hide the quicksands lying beneath it. At one place, where the sand looked damp and black, it bore the weight of the horses very well; at another, where the appearance of the ground was precisely the same, in went the leading horse, sinking into a slough of sand often shoulder-deep, sometimes deeper. From this he could not always extricate himself, and we had to dismount to help him out. The dry-looking places were no more to be trusted than the wet, for the dry sand was often a mere crust concealing a pit-fall, into which one or other of the horses would suddenly sink; fortunately, none of them were very deep. Our horses, after a little experience over this sort of ground, became very much frightened, and moved forward with the greatest caution and reluctance; they huddled together

in a body, sniffed the ground with their noses, and we often had great difficulty in driving them forward, but where one horse had ventured all the others would immediately follow. We rode last of all, and found that the trodden sand generally bore us tolerably well, though not always, and once we saw Olaver, who was following some of the baggage-horses, suddenly disappear, horse and all, into a hole covered by a crust of sand, over which we were about to follow him ; he managed, however, to scramble out, and got his horse out unhurt. We could not have ridden less than five or six miles among these quicksands, and were not clear of them before it grew dark.

A few miles after passing the Skeidará quicksands, we had a fine view of the Oræfa Jökull. There had been a thick drizzling rain falling most part of the afternoon ; but about the time of sunset the clouds vanished, and we saw the mountain with his summit glowing in the rich tints of the evening light, and looking the monarch of Icelandic Jökulls. The top of the mountain from this side appeared to be a high dome of snow, standing up out of a vast snow-field, which, with rounded slopes, fell away from it north and south, and then on each side rose again, so as to form two well-defined shoulders. From these the snow-slopes fell away much more steeply than between them and the summit. The most northern of these snowy heights, called Hvanna-dals-nukr, appeared almost to rival in height the Knapp itself. The dark rocks, which form the central dome of the Jökull, appear from almost every side like a black knob rising out of the snow ; and hence it is called the Knapp, or button. From the snow-slopes beneath Hvanna-dals-nukr, a very fine glacier falls in a precipitous ice-cataract, between two steep hills, into the plain beneath, forming with the slopes above a

continuous stretch of ice and snow, from the base to the summit, a height of nearly 6000 feet.

At length, after a long and tedious ride from the Skeidará, we reached three or four small streams, which flowed from the east end of the Skeidarár Jökull, and from the Orœfa. After crossing these we felt grass again beneath our horses' feet, and, cantering forward, soon heard the bark of dogs, and at 11.30 p.m. reached the farm of Svina-fell, our destination for the night; and we were not long in pitching our tent.

The next morning (August 10th), as we were at breakfast in our tent, we heard ourselves accosted in English. The speaker turned out to be Mr. Milbanke, an English gentleman, who had come up to Iceland in the early part of the summer, and was travelling nearly the same route as ourselves. He had arrived at Svina-fell two days before us, and was lodging in the farmhouse. He told us, that when he crossed the Skeidará it was not in nearly such a dangerous state as that in which we had found it. After breakfast Mr. Milbanke proposed that we should accompany him in a walk to the Svina-fell glacier, which we had seen on the previous day from the Skeidarár Sandr, and was not ten minutes' walk from the farm. We gladly assented to his proposal; and, taking our alpenstocks, we all three started together on our expedition.

We got upon it near its foot, where it adjoins the green slopes of Hafra-fell, a steep mountain abutting into the plain behind the farm, and shielding it from the cold winds that sweep over the icy tracts of the Vatna Jökull. The lower end of the glacier does not extend quite across the valley down which it descends, and a steep-sided hollow filled with the débris deposited by a lateral moraine separates it from the slopes of Hafra-fell. Above the bottom of this hollow rises a high bank of ice, which

forms the side of the glacier. Crossing the hollow, and scaling the bank, we gained the top of the glacier, and proceeded up it. The ice was everywhere full of minute air-cells, which gave it a white colour, and there were few places showing the brilliant colouring which is ordinarily one of the greatest beauties of glacier ice. Even the crevasses were, as a rule, wanting in colour,—at least those on the lower part of the glacier. Higher up the vivid tints of blue and green, that lighted up the broken parts of a fine ice-cataract, fully atoned for the absence of colour below. The glacier at its lower part was not much crevassed, but its surface was broken by high ridges of ice, between which lay long and deep furrows. It looked as if it might once have been a flowing sea, and those long ridges rolling waves, arrested suddenly in their onward course, and ice-bound in death-like stillness. They seemed still to maintain the lines of the swelling billows; and one might almost fancy that it needed but some magician's wand to break the spell, and, unbinding the icy waves, let them once more roll onwards down the valley. As we proceeded up the glacier, deep crevasses opened in the troughs between the ridges, widening more and more the higher we ascended. We were too close beneath the steep sides of the Orœfa Jökull to obtain a good view of it. Far away to the west extended the dark expanse of the Skeidarár Jökull, while at its eastern end I saw a few small spots of white in its black ice-fields.

After a walk of about two hours upon the glacier, we returned to the farm, and had our horses driven in from the pasturage grounds, and saddled for Knappa-vellir. When they had been collected together and brought in, we found one of the baggage-horses so lame as to be useless, and quite unable to go any farther. He had been badly

strained in one of the sand sloughs on the Skeidarár Sandr. We were in some perplexity as to what was best to be done under the circumstances, when the good people of the farm brought us a fresh horse of their own, and offered to exchange it for our injured animal. To our surprise, they were ready to do this as an act of hospitality, without expecting so much as a *skilling* to be thrown into this one-sided bargain. But their generosity did not end here; for our obligations to them were still more increased by their sending out to us, at the minute of our departure, the welcome present of a leg of mutton. It was a joint off one of two sheep, killed to provide for a funeral feast, to take place on the following day, when the body of an Icclander, who had met his death amongst the quicksands of the Skeidarár Sandr, two days before we crossed them, was to be buried at Sandfell, where is the nearest church. He and his horse had fallen into one of the holes and sunk deeply into the quicksand, and it was not without great difficulty that his body had been recovered and brought to Svina-fell. After his funeral his neighbours were to meet the next day, as is the custom in Iceland, at a feast given in memory of the dead.

Bidding farewell to Mr. Milbanke, who intended to stay some days longer at Svina-fell, we started at 4.30 P.M., and after a ride of three hours and a half reached Knappa-vellir. We had determined to make this place our headquarters for the next day or two, intending, if the weather should prove favourable, to attempt thence the ascent of the Orœfa Jökull. Our original intention was to have gone on to Kvísker, the farm from which Mr. Paulson attempted the ascent in 1794; but we were informed that there was not sufficient grass at that place for our horses, and therefore determined to stop at Knappa-vellir.

The road between Svina-fell and Knappa-vellir was not very interesting. Shortly after leaving Svina-fell we passed beneath the Hvanna-dals glacier, one of the five or six glaciers that descend from the Orcefa Jökull towards the south. All of these are similar in character, being short steep glaciers, coming down from the heights of the mountain between the rocky sides of beetling fells.

For the rest of the way the road lies beneath steep and lofty hills, which, like huge bastions, flank the base of the Orcefa Jökull. The ground beneath is a flat plain, consisting for the most part of sand; though, scattered here and there in the midst of the sandy desert, a few isolated farms, with their green tûns and pasture-lands, offer a pleasing contrast to the general aspect of dreariness and desolation. The mountains, too, though barren above, are in many places luxuriantly green towards their bases; and, to judge from the large flocks of sheep that we saw grazing upon them near some of the farms, make good sheep-runs. Near to the farm of Hof we ascended a slight rise in the ground, and found ourselves upon a grassy plateau which surrounds Knappa-vellir. The grass lands here are much extended, and run out for a long distance towards the sea, ending in the flat spit of sand which almost joins the promontory of Ingolfs-hofdi with the mainland. Ingolfs-hofdi itself is a rather low, square looking, rocky headland, which runs out into the sea nearly opposite to Knappa-vellir. It is historically interesting, as being the spot where the Norwegian Ingolf landed on his second visit to Iceland. We reached Knappa-vellir at 8 o'clock in the evening, and found it the most populous place we had come to since leaving Reykja-vik. There are two farms here, each of them consisting of several houses; so that there may be as many as five or six different families in the "*thorpe*," as the Icelanders term a cluster of farms. Each farm has its separate tûn.

There being no church near, we pitched our tent in one of the túns. It is the custom in Iceland for travellers to put up in the churches, and we generally found them very comfortable sleeping places; but where there was no church, we preferred our tent to the too often close, and not very agreeable atmosphere of the Icelandic farm-houses; even although by so doing we had to make our bed upon the ground, instead of sleeping literally upon mattresses of eiderdown. We used, however, to obtain our necessary supplies of provisions from the houses: coffee, milk, butter, and káku, (a sort of rye-flour damper), are to be met with almost everywhere. By the time that we had got up our tent, and spread our waterproof sheets and rugs upon the ground for our beds, Olaver appeared with a pot of steaming hot coffee and a heap of káku from the farm. So we drew one of our travelling boxes into the middle of the tent, to serve as a table, and sat down to supper. The leg of mutton which we got at Svina-fell in the morning made an excellent addition to our fare.

After supper came our evening pipes, and a bowl of warm new sheep's milk. Then we crept in between our rugs, and were soon sound asleep.

August 11th, Sunday. — We were naturally looked upon by the inhabitants as objects of great curiosity. Very few, if any, of them had ever seen a foreigner, except perhaps a few Danes, at Djupivogr or Eyrar-bakki, when they went there to lay in their stores of provisions. This part of the island had remained unvisited since M. Gaimard travelled through it in 1836, previous to which no traveller had been there since Henderson in 1815. The people seemed to find great pleasure in watching us, and looking at our books, maps, knives, and such sorts of things. When we were in our tent we had generally a group of half a dozen spectators clustering round the door. Their great delight

was to see us begin our meals. On these occasions we had quite a ring of people—men, women, and children—about us, who approached as near as they could, without being intrusive, and watched us until we began to eat, as if they expected to see something strange in our manner of doing so. Soon after we had begun, they generally one by one dispersed. Some of the children, who thus gathered round our tent, looked very sickly (one little girl was horribly deformed); but the men for the most part looked hearty enough, and several of them were fine tall strapping fellows; the women, too, though, like most of their countrywomen, they were not remarkable for their beauty, appeared strong and healthy.

The weather all the morning was dark and threatening, and clouds of mist hung about the sides of the mountains. But in the afternoon it looked more promising, the clouds began to break, and the sun at intervals shone out brightly and warmly. At half-past four we set out for a stroll up the mountain behind the boer. Following up the course of a small stream, which flows down near the farms, we soon left behind us the grass lands which skirt the foot of the rising ground behind Knappa-vellir. Beyond them is a square bluff hill, standing out from the mountain, which from below appears almost perpendicular. Up this hill we proceeded: the ground of which it consists is loose shingle, excessively disagreeable to walk upon. Here and there, however, we found, to our great relief, long strips of a soft grey moss, which gave us good footing, and made the walking comparatively easy. Among the moss were innumerable berberries and bláberries, quite blue with fruit, ripe, juicy, and very tempting. After a hard pull of about twenty minutes we gained the brow of the steep slopes, and found ourselves in a sort of large semicircular basin of supervening ridges, which were wholly composed

of loose stones of various sizes, and shingle. A few thin plots of rushes, and scattered plants of thrift and bladder campion, grew amongst the stones. Both of these flowers seem to delight in barren spots, where there is not soil enough to sustain the growth of any other plant, and they are very common on the shingle deserts of Iceland. The ridges above us were not very steep, and we soon gained the rim of the basin, and came upon a large barren plateau,



ORÆFA JÖKULL, FROM PLATEAU ABOVE KNAPPA-VELLIR.

which sloped gently down from the N. and N.W. towards the S. The ground of this plateau was a shingle, made up chiefly of tuff, lava, and pumice stones; amongst which were also a great number of small bits of obsidian, generally of about the size of a nut, and blocks and boulders of a syenitic-looking rock. Soon after reaching the plateau we came in sight of the unsullied white snow-fields of the Oræfa Jökull, sparkling in the afternoon sun, which

had by this time asserted his superiority over the clouds, and was shining as warmly and brightly as on an English summer afternoon. The snow-fields looked so inviting, and the day was so fine, that, had it not been too far spent to allow sufficient light to make the ascent and return, we should at once have attempted the mountain. But it was too late; and so, being attracted by the sound of a waterfall on our right, apparently at no great distance, we turned our steps in that direction, keeping nearly parallel to the snow-line that bounded the plain on the N. After walking for some two or three hundred yards we reached the brink of a precipice, which, with a corresponding precipice on the other side, bounded a narrow gorge. Through this, at the depth of several hundred feet below the plateau on which we stood, descended a steep and broken glacier, its ice coloured with the most lovely tints of green and blue. The glacier, fed by the snows of the Jökull, seemed to have broken with irresistible force through the opposing barriers of rocks, and made for itself a way towards the foot of the mountain. Sweeping round these rocks, the glacier entered the throat of the gorge, and after descending gradually for a short distance, fell down an almost precipitous cascade, filling up the whole width of the gorge. From the plateau upon which we were, we could peer over the perpendicular cliffs into the gaping crevasses that opened beneath. On our left, the waterfall, whose roar had attracted us, dashed with one bold leap down to the glacier, and then, after flowing along its surface for a short distance, disappeared beneath the ice. Above us farther off were the extensive snow-slopes of the Orœfa, sweeping down from the Knapp, a lofty dome of snow-capped rocks, which, like the hoary watch-tower of some ancient castle, overlooks the vast expanse of the Vatna Jökull.

After spending some time in the enjoyment of this wondrous scene, we turned back the way we had come, and made across the plateau, in a N.W. direction, towards a high ridge of stones and rocky débris, which lay on the other side. This débris was evidently a moraine brought down by the ice from some dark rocks that rose out of the snow, like a vertical wall, at the distance of several hundred yards.

In our way across the plateau we came to a large field of pumice sand, several acres in extent, deeply scored by the streams which flowed from the snow regions above. We found it in general very soft and friable, but in some places there lay imbedded in it great masses of pumice stone, not yet reduced to the fine powdery consistency of the sand around them. On the other side of the moraine, a broad tongue of ice ran down between two of the lower mountains of the Jökull. On this stood five or six ice-cones, varying in height from one to twenty feet, covered with black sand, and offering a curious contrast to the white ice which surrounded them. The view we obtained from this plateau was not so extensive as we had hoped. To the N. and N.E. it was confined by the Orœfa Jökull itself, and by Skadar-fjall, one of the dark buttress-like mountains that lie at the base of the Jökull. To the N.W. it was equally shut out by the snow-slopes above us in that direction. To the W. we could see the dusky Skeidarár Jökull far beneath us, and to the S. the dark promontory of Ingolfs-hofdi set in the ocean, as in a framework of blue. Of the peaks, passes, and glaciers in the interior of the Vatna Jökull, we could see nothing.

We had no time to explore more of the Orœfa that afternoon, but hurried homewards, to avoid being benighted. The sun was down when we reached our tent, and a dark cloud-wrack rising up from the sea fully war-

ranted the unfavourable answer we received to our anxious inquiries whether the next day would be fine. We were told that there was not the least hope of its clearing up enough to allow us to ascend the Jökull.

August 12th.—When we first looked out, thick clouds hung about the tops of the mountains, but about 8 p.m. they began to clear off, and on consulting the farmer in whose tûn we had taken up our quarters, he held out some hopes of the day turning out fine after all. We determined, therefore, upon making a start.

The weather, which for the past week had generally been thick, clearing only for a few hours before sunset, seemed likely to continue; so we felt that any chance of a fine day was not to be thrown away. Hoping that we might be favoured by one of those sudden changes which are common in the south-eastern parts of the island, we at once engaged the farmer to act as our guide, which he was ready enough to do, for the small sum of one dollar and two marks, not quite three shillings.

Sigurdr,— for that was the farmer's name,— was a fine strapping fellow of one or two and thirty, standing at least six feet high in his stockings; but he scarcely looked prepared for a mountain expedition, when, in a quarter of an hour from the time that we had engaged him, he presented himself before our tent door, with only a pair of common Icelandic shoes on his feet. Underneath the shoes, however, were two pair of stout, close-knit woollen stockings, bound below the knee, outside his dark blue breeches, with garters of blue, red, and white; and round his neck was wound the comforter invariably worn by Icelandic guides. He had on his best dark woollen jacket and his best wide-awake hat, unmistakable signs that he was going from home; and the heavy wooden drift-wood pole—armed at the bottom with a large iron spike of some

three inches' length driven into the wood — spoke of the nature of his expedition. When, in addition to these, he had fastened round his broad shoulders the rope that we had provided, and had shouldered our ice-axe, he did not, after all, look so very unlike a mountaineer. Before we started, one of the people from the farm brought us each a pair of crampons, and offered to lend them to us. I preferred, however, trusting to the nails in my boots. The possession of crampons shows that the Icelanders are not altogether unacquainted with their Jökulls; but as far as I could learn, they only venture upon them in search of stray sheep, or in crossing from one mountain sheep-run to another. Their national apathy and want of energy make it unlikely that they should associate themselves, like the Swiss peasants, with their mountains.

Our few preparations were soon made, and we started from the bær about 8.30 A.M. Olaver remained behind, and, after bidding us farewell, stood looking after us, with a face expressive of the surprise, not unmingled with contempt, with which he regarded the foolhardiness of Englishmen, who ventured upon a Jökull for pleasure.

Ascending the mountains immediately behind the bær, by a somewhat easier path than that we had chosen the day before, we soon mounted to a considerable height.

At 9.50 we gained the stony plateau, which we had reached in our stroll the previous day, and after twenty minutes' more brisk walking we came to the first patch of old and dirty snow. Keeping on our left the moraine we had crossed the day before, we picked our way amongst the large stones of a water-worn gully, which lay between small hills of pumice. Passing over one of these hills, on which we found numerous bits of obsidian scattered about, we came to a spot where many cones and hard-frozen ridges of ice, covered with

pumice sand, marked the foot of the ice-fields of the Jökull.

Here we rested for a few minutes before getting upon the ice, for we were already beginning to feel the heat of the day, the sun being very powerful, although the top of the mountain above us was still shrouded in thick clouds. Sigurdr, who felt the heat as much as we did, amused us by going to the nearest water-rill, and washing his head all over; after this refreshing operation, he was ready for a fresh start. Indeed we could not afford a long rest, for the snow-terraces still rose before us: the hot sun would soon soften the snow, and every minute's delay would make the walking over it more laborious.

We, therefore, rose from our resting-place, and in a few minutes set foot upon the ice. On the lower part of this there was no snow, and the thin coating of ice, with which last night's frost had covered the innumerable little water rills which coursed their way over the hard frozen surface of the névé, were yet unmelted, and crackled crisply and joyfully beneath our feet.

We struck across the ice in a N. W. direction, towards the mass of dark rocks, which, at the distance of five or six hundred yards from the place where we had first got upon the ice, cropped out of the bosom of the snow in a fine unbroken mass. Before we reached them a surface of snow had almost imperceptibly replaced that of ice; but as yet this was hard frozen and firm, and afforded good footing. Having reached the S. E. corner of the rocks, we kept below them till we came to their western corner. This we rounded, and proceeded up a steep ascent of snow, having the rocks on our right.

Here our progress was stopped by a broad crevasse which was too wide to jump: we therefore left the vicinity of the rocks, and chose a way up the snow-slope

some distance from them. The *névé* (for the snow only served as a covering to it) was not much broken, and the walking was for some time very good. But by-and-by we came to a place where several crevasses showed themselves beneath the upper crust of snow, which looked as if it concealed others. We therefore thought it better to have recourse to the rope. Shepherd and I accordingly bound ourselves in the usual manner, and tried to prevail upon Sigurdr to follow our example; but he only laughed at us, and assured us that "he had often been upon the Jökull before," and there was no "fear for him:" "he was not afraid of the crevasses." We endeavoured to explain to him that our safety, as well as his own, might depend upon all being properly tied. Our persuasions were all in vain. "You are safe enough so," he repeated; until at length, finding that nothing that we could say would induce him to link his fate with ours, we let him do as he wished, and started again. He led the way with the end of the rope loosely twisted two or three times round his right hand, in which he also carried his alpenstock; while Shepherd and I followed roped together. Thus we proceeded up the snow-slopes, now making a circuit to avoid a crevasse, and now crossing one on a bridge of snow.

The ascent for the first half-hour after we had got upon the ice was very easy. At the end of that time we had a fatiguing pull up a long snow-slope, lying at an inclination of 30° , the surface of which had already been sufficiently softened by the morning sun to make the walking up it tedious work. We reached the top of this slope about mid-day, and crossed a narrow snow plateau to the slopes beyond. Here we found the last patch of old snow that we saw in the course of our ascent. The rounded terraces of the mountain that rose above us were all covered with a new and dazzling mantle.

After toiling up hill for a quarter of an hour more, we found further progress apparently barred by an immense chasm, or bergschrund, which yawned before us, right in the line of our path, and ran east and west as far as we could see. We halted on its brink to hold a council of war as to our best mode of proceeding. Sigurdr suggested that we had come quite high enough, and might as well return home at once. He could not imagine that we wished to reach the summit. He hinted that we had seen the Jökull, and that that was what we had wanted. This suggestion, I need scarcely say, did not at all accord with our ideas, and we scouted it at once. But how to get any higher was the question. It was manifestly impossible to think of leaping or descending the crevasse, for it was enormously wide and deep, and along its brink ran a broad coping of snow, upon which we could not safely trust ourselves, as it was in a very unsound and dangerous state, and we could hear portions of it now and then falling into the chasm with a deep and ominous thud. After looking about us, the only possible way of crossing it seemed to be upon a frail-looking snow-bridge that spanned it at some distance to our left. On our right, it extended as far as we could see, until the brow of a rising terrace of snow hid its continuation from our view. However, the bridge looked so dangerous and uninviting that we sent Sigurdr off to the right, to see if he could discover any better way across. Meanwhile we sat down at the spot where we had first reached the crevasse, and while we were waiting I buried one of my thermometers an inch deep under the snow. On taking it up again it stood at -4°C. , or 24.8°Fahr. Before long Sigurdr returned, and reported that he could find no practicable way in the direction that he had taken, so there was no course open to us but to cross the snow-

bridge on our left. We therefore started again in the same order as before, Sigurdr first, holding the rope, then I, and last in the line Shepherd. Cautiously we felt our way along the snow-coping, treading in each other's foot-steps, and sounding at every step with our alpenstocks. We sank knee-deep into the soft snow, through which we could easily thrust our alpenstocks. This was dangerous work so long as it lasted. On our right hand was the wide yawning chasm, too near to be pleasant whilst we were treading on such treacherous ground. A foot on our left was a steep declivity of snow, at the bottom of which opened another wide-gaping crevasse. Every hole made by our alpenstocks, and every deep footmark, sparkled with a lovely vivid blue.

Advancing thus, we came to another wide crevasse, opening at right angles to that running across our path which had proved so great an obstacle. Luckily we found a snow-bridge by which we crossed it, though not without some danger, stamping down the loose snow until it became sufficiently close to bear our weight. We then found ourselves at the end of the snow-bridge, by which we hoped to be able to pass over the large crevasse. It looked formidable enough, in the treacherous condition of the snow; for our rope, although a tolerably long one, was not long enough to reach across the whole width of the crevasse, and for six or seven steps we must all be upon the bridge together. But we had no choice, and cautiously followed one another over it. In a few minutes we had all crossed in safety. From this spot to the Knapp itself we found very little real difficulty; but the snow-slopes were steep; and since the surface of the snow was by this time much softened, and we generally sank into it ankle deep, and often deeper, the walking was rather laborious. The few crevasses that were in our path did not give

us much trouble. Indeed, we had no difficulty until we arrived at the brink of a bergschrund, at the distance of some fifty yards from the base of the dome. The upper side of this was at a considerably higher elevation than that on which we stood; but it was not very wide, and a few feet below its mouth, it was further narrowed by a ridge of snow on each side. Sliding down to that on the near side, Sigurdr jumped across the chasm, and, standing on the ridge on the other side, cut a few steps in the hard-caked snow with the ice-axe, and scrambled up. We followed; and in ten minutes more we were all standing together on a narrow ledge of snow at the bottom of a steep snow-bank, which clung to the rocks at the foot of the Knapp or dome.

It was now nearly 1.30 p. m. Sigurdr insisted that we had reached the summit of the Jökull, and that it was impossible to climb any higher. No one ever had gone, and no one ever could go higher. However, since he knew no more of the top of the mountain than we did, and since he had half a dozen times in the course of our ascent suggested that we were already high enough, we did not put much faith in his opinion. We were determined, at least, to do our best to reach the top of the dome, though we could not hope to gain much by so doing, except the satisfaction of not being thwarted in our wish to reach the summit; for the mist, which had partially cleared away in the middle of the day, and held out to us tantalising hopes of a fine view, was now again fast rolling up the sides of the mountain, and must inevitably in a short time envelop it and us in its impenetrable thickness. There was evidently not a minute to be lost. The only question was, in what way we were most likely to succeed. The snow bank, at the foot of which we were standing, rose steeply for about fifteen feet

above us. Above it towered almost over our heads, to the height of fifty or sixty feet, the perpendicular cliffs which form the sides of the Knapp, too steep to allow of any snow lodging upon them. Above these, again, rose a thick cap of snow, crowning their summit. The northern side of the Knapp was, as we had seen from below, less precipitous, and was covered with snow. Up this we had hoped to be able to find a way; but now that we were close to, and almost within a stone's throw of the actual summit of the Jökull, we discovered, to our great disappointment, that we were almost as far off as ever from this, the only way up the rocks that seemed at all practicable. We were cut off from it by a system of wide crevasses in the broken snow. To have crossed these we must have descended again half-way down the mountain, and made a long detour to the left. This we could not possibly have done before the fog closed round us. Nothing was left, therefore, but to make an attempt from our present position.

Shepherd was unfortunately so knocked up by the pace we had been walking, and the heat in the early part of the day, that for a time he was unfit for any further exertion. As for Sigurdr, he was so firm in his conviction that it was impossible to climb an inch higher, that he at first refused to stir a step. But I knew that every minute of clear weather was precious, so without waiting until Shepherd had recovered, or Sigurdr would listen to my persuasions, I loosed myself from the rope, and determined to see how far an ascent was really practicable. The snow-bank was very precipitous, and the snow which composed it very soft. As I stamped it down to make a firmer footing my leg went in more than knee-deep, and it was difficult to obtain any hold for my alpenstock, which kept slipping through to its full length each time I thrust it before

me. The ascent was so steep that, as I leant forward in making a fresh step upwards, my chest almost touched the snow opposite; but the bank was not very high, and this upstairs work did not last long. When I was half-way up the bank, I found that Sigurdr was coming up the slope behind me. Practice is better than precept; and when he saw that I was in earnest about attempting to reach the top, he followed. We soon came very near to the top of the bank. It was not, as I had imagined, leaning against the sides of the dome; but the portion of it nearest to the rocks had melted and fallen away from them, leaving a gap of three feet between them and the top of the bank, which was merely a thin edge of snow. Leaning against this, and peering over it into the gap, I saw that the bank on which we were standing was much excavated, and formed a large snow cavern beneath us. It was only the uncertain support of the roof of this cavern that we had under our feet. It was impossible to climb the rocks from this point; and therefore, descending a short distance down the snow bank, in order to obtain a more reliable footing, we kept along its side for about a dozen yards. Here I thought it might be possible to scramble up the face of the rocks to a small ledge some twenty feet above the snow, and that if I could reach this, I saw a chance of being able to climb still higher. Sigurdr, who was perhaps right, declared the place to be quite impracticable, and would not attempt it. However, it seemed to me that here lay our only chance, and so I determined not to give up unless fairly beaten. I therefore again scaled the snow-bank, and, after some difficulty, managed from it to reach a small ledge of rock that jutted out at about the same height as the top of the snow. But the work of scaling the rocks was no easy matter. They were of clay-slate, the laminated

nature of which had indeed made numerous small shelves and edges in their otherwise precipitous face; but these shelves were not only so small as to afford a poor hold for hand and foot, but most of them had been so loosened by the weather, that they broke off and fell at the slightest touch. There is much advantage in having a good place to start from when climbing difficult rocks. The ledge upon which I was standing was only some three inches wide, and the precipice continued below me for ten or twelve feet, and there ended in a great shoulder of rocks, bulging out into the snow at their base. I managed, however, to climb up the rocks to a height of about fifteen feet above the top of the snow-bank; but it was quite impossible to climb higher, owing to the very loose and broken state of the laminated shelves.

In descending again, I narrowly escaped a dangerous fall from the giving way of the ledge upon which I was standing, but I eventually managed to regain the top of the snow-bank in safety. Sigurdr, who had meantime kept along it some way farther, now came back, and reported that the rocks were just as steep there as where I had attempted them. On his return, he found me in rather an absurd and awkward position. I was sitting astride the edge of the snow-bank, without being able to stir. My alpenstock, which I had been holding too loosely, had slipped out of my hand through the roof of snow into the cavern beneath, and without it I could not very well descend the bank of loose snow. Sigurdr helped me out of this predicament, and recovered my alpenstock for me: it had luckily lodged between the rocks and snow at no great distance down. The fog was now gathering thickly round us, and obliged us to give up further attempts to reach the summit.

Descending, therefore, to the bottom of the snow-bank,

we rejoined Shepherd, and, roping ourselves together again, at 2.5 P.M. turned our backs upon the Knapp, not a little disappointed at our failure. I am by no means sure that the dome is equally impracticable on every side; although, if Paulson actually reached the foot of it (of which there is some doubt, from the account of his ascent quoted in Henderson's book), then the summit would appear to be equally inaccessible on the S. E. side. A traveller attempting to ascend the Knapp from Knappa-vellir would be most likely to succeed by crossing the ice from the shingle plateau in a N.W. direction for about a mile, and then turning up the mountain. I am inclined to think, however, that a better view of the interior of the Vatna Jökull would be obtained from Hvanna-dals-nukr, which should be ascended from Svina-fell. We cannot be said to have had any view at all: the fog shut out the distance, and we saw even less than during our stroll the previous day. Nor could I discover any traces of the crater mentioned by Paulson, although we must have been very close to the spot from which he observed it. It is possible that it has long since been filled up by snow. Our descent was rapid. We left the ice at 3.15 P.M., by which time we could only see a few yards before us, so thick was the mist, and we reached the thorpe again at 5 o'clock,—our expedition having only occupied eight hours and twenty minutes.

August 13th.—The weather was again hopelessly bad, and, anxious as we were again to attempt the Jökull, we could not afford to wait for its clearing up, and had to pursue our journey eastwards. With Sigurdr as our fylgdar-madr, we started for Reyni-vellir at 9 A.M.

The grass-lands of Knappa-vellir were soon passed, and then we came upon a flat tract of stony ground, the shingle which composed it being made up of bits of lava,

pumice, slag, tuff, and obsidian. This plain, called Knappa-vellir Sandr, extended on the S. to the sea, and was bounded on the N. by the precipitous mountains that flank the Orœfa Jökull. These were separated from one another by steep narrow ravines, above which the weather-broken rocks beetled to an immense height. Down the ravines abrupt and declivitous glaciers descended to the plain. After traversing the level tract of Knappa-vellir Sandr, our road descended a sloping hill, partially covered with moss, and we entered the Breida-merkr Sandr, one of those flat, dreary plains of sand which border the coast, more or less, beneath the whole length of the Vatna Jökull. The farm of Kvisker is a little oasis in this desert, the rest of the plain being quite barren. Near Kvisker the Orœfa Jökull and Breida-merkr Jökull are united ;—indeed they are, strictly speaking, the same Jökull : for although they, as many other parts of the Vatna Jökull, are distinguished by particular names, yet in reality all these parts form but one enormous tract of ice, extending from the Skaptár Jökull on the W. to the Heina-bergs Jökull on the E., a distance of sixty or seventy miles.

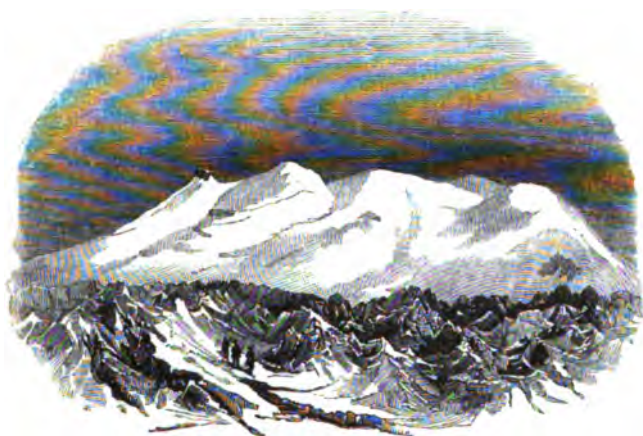
Unlike the Orœfa, the Breida-merkr Jökull is not a mountain, but rather an ice-plain, which nowhere rises to the height of more than 300 or 400 feet above the sea level. At its W. or lower end it terminates in a steep short incline, unlike either the terminal wall of the Skeidará Jökull or the marginal slopes of the Merkr Jökull. This incline appears to be the natural shape of the glacier, and not the result of accident. Its base rests upon a hill of shingle and gravel raised above the rest of the Sandr, which is easily distinguishable from an ordinary terminal moraine, and has apparently been ploughed up by the Jökull in its advance towards the sea. It is flat at the top for a short distance from the ice, and then slopes down to the sand beneath, the

slope being covered with heather and moss. As we proceeded, the margin of the Jökull became more irregular in shape, consisting of immense blocks of ice sometimes almost perpendicular as a wall, at others fallen about in shapeless disorder. But, as a rule, the ice near the margin was not much fissured, whilst the surface of the glacier more in the interior of the Jökull was broken into large cubical blocks, that gave it a very irregular appearance. The ice was slightly coloured, being for the most part remarkably white, like that of the Svina-fell glacier, and, with the exception of the part close to its margin, was not at all discoloured with sand or grit. As we rode along, I observed one or two moraines. They come from the Breida-merkr-muli, a curious grass-covered mountain, which stands alone in the middle of the Jökull,— a green island in a sea of ice,— at the distance of about a mile from its margin. The sheep of a neighbouring farm are sent over the ice every summer to this mountain to graze. In one place, near the margin of the Jökull, were a number of ice-cones coated with black sand. The appearance of a group of these black sugarloaf-shaped cones upon the white ice was very remarkable. They were of all sizes, from fifteen feet downwards.

Henderson describes the Breida-merkr Jökull as being subject to remarkable fluctuations. Near its S.E. corner, he discovered a track, made only eight days before his arrival, lost and swallowed up in the ice; and the ice had, at that time, evidently advanced a considerable distance beyond its bounds of fifty years before. I could not learn from any one who lived in the immediate neighbourhood of the Jökull that it now shows any perceptible changes in its dimensions. The only person who spoke of its advance at the present time was one of the priests at Hof, who told me that it had certainly advanced towards the sea during the last ten years. But my own observa-

tions as to the position of the Jökull, according as they do with the clear descriptions of Henderson (written in 1815), and the accurate map of Gunnlaugsson (published in 1845), make me doubt how far this information is to be relied upon. The Jökull is seen in the shape of a large semicircle. Its centre part projects towards the sea, and diminishes the width of the Breida-merkr Sandr from four or five miles to that of one. Across the narrowest part of the Sandr, the Jökulsá á Breida-merkr Sandr, generally reputed as the most dangerous river in Iceland, rushes from the Jökull with resistless impetuosity. We reached this river at 2.30 P.M., and as we approached it, it certainly looked as if it deserved the character it bears. It is sometimes possible to avoid fording the river by crossing the ice of the Jökull above it. This is the only way by which sheep can be taken from one side of the river to the other; but, although it is generally practicable for sheep, and persons on foot, it is very seldom that horses can cross. Sigurdr, however, thought it worth while to make a reconnaissance; and as, on his return, he pronounced it impossible, we were obliged to cross the river in the usual way. I shall not a second time recount the adventures of the passage of an Icelandic Jökulsá; suffice it to say, that we found the Jökulsá á Breida-merkr Sandr little less dangerous than the Skeidará. Both rivers were of nearly the same breadth, and in both the current was strong, and shoals of ice were being carried down. We reached the eastern shore of the Jökulsá at 3.30, having been about three-quarters of an hour in crossing. Our road at times led us very near the sea, and the whole coast for miles was strewn with bleached and bleaching pieces of driftwood, chiefly pine logs, many of which still retained the stumps of their branches. These logs are said to come from the wrecks of Norwegian timber vessels, which have

foundered from time to time in the Northern Sea; but they are too numerous to be thus accounted for, and some must, I think, be drifted from the Norwegian coast. The quantity is so great, that not only does it serve the people for firewood, but they also build and repair their houses with it. The priest at Bjarna-nes, where the church had been newly restored, informed me that the repairs had been made wholly of timber cut from driftwood found upon the coast near the spot. After continuing our monotonous ride over the dreary Breida-merkr Sandr for two



ORÆFA JÖKULL, FROM REYNI-VELLIR.

hours and a half from the Jökulsá, we came to a place where the Jökull takes a sharp turn towards the N.E. It continues this direction for a short distance only, when its continuity is interrupted by Fell, a high rocky mountain, ending in steep beetling crags, and split in two from top to bottom by an enormous fissure. The disrupted cliff looks as if it might at any minute fulfil an old prophecy,—that it shall some day topple over, and annihilate the little farm at its base.

We reached Reyni-vellir at 6.10 P.M. Soon afterwards the clouds cleared off from the Orœfa Jökull, and we obtained a fine view of its summit and snowy slopes.

August 14th.—We were in the saddle again, and started for Bjarna-nes at 8.35 A.M.: the morning was as warm and sunny as could be wished. For the first part of our way we rode beneath a mountain range, that extends along the south of the Jökulls, and bars their progress into the plain. The south sides of these mountains form imposing precipices, that, coming sheer down into the valley below, terminate in grassy banks, strewn with masses of rock that have fallen from the cliffs above, amidst which the flocks were browsing. The cliffs are much broken by the weather at their summits, and Echo makes them her favourite haunt, judging from the frequent response she sent back to the baying of the Reyni-vellir dogs. The grassy slopes beneath them are bright with buttercups, white clover flowers, campanulas, and forget-me-nots, all growing in great luxuriance. Leaving these mountains behind, we rode across a broad tract of sand towards Kálfa-fellstadr, near which we had much difficulty in crossing the morasses.

After passing these, our road led us close to the sea, round the point of a projecting mountain called Hestgerdis-nukr. High up in the cliffs of this mountain is a very singular-looking group of red basaltic organ-pipes, arranged with great regularity of structure, though bulging out considerably from the face of the rock. Soon after 5 o'clock we reached Holtar, a farm which stands in a large marshy plain on the W. bank of the Hornafjot, a broad glacier stream flowing from the Heinaberg's Jökull. Here we had to engage a fresh guide to take us across the river, which is about two miles in width, and has a sandy bottom, in which are said to be many

quicksands. The road across it was marked out by stones and poles stuck in the water, and we found no great difficulty in fording it. The water was not in any place deeper than up to our horses' girths, and the stream was not swift. Far away on our left were several long brown mountain ridges, running back from the plain for two or three miles into the white Jökull, which came down between them in a broad fan-shape stream, spreading out considerably as it approached the plain. Other ridges jutted out into the valleys between the Jökull and the sea. At the base of one of these lay Bjarna-nes, the centre of a great number of farms that lined the green shore of the Horna-fljot. We reached it at 6.50 P.M., and pitched our tent in the tûn adjoining the priest's house.

August 15th.—We were unwillingly detained at Bjarna-nes the whole day by a raging storm of wind and rain, whose fury it was impossible to think of facing. Our host called it "*Parvus imber.*" *Parvus imber*, indeed! A north-easterly gale tearing over the mountain-tops made his whole house quiver in its blast, whilst the rain swept past in almost vertical torrents, ever hurried onwards towards the dark cloud-shrouded Jökull. For half the night the wind shook the canvas walls of our tent as though it would tear them into shreds, and drove the rain through them in showers. When we were awake,—and the night was not such as to leave our sleep altogether undisturbed,—we were in momentary expectation of seeing the fastenings give way, or the pole snap, and of having the wet canvas flapping about our ears; but pegs and pole held out bravely. In the morning we found the ground on which we were lying a perfect pool of water, and we were fairly driven out of the tent, and fled for refuge to the church.

The churches are, as I have said, commonly used for

the reception of travellers; they are usually built of wood, but often have the additional protection of a thick turf wall: with the difference of being built of wood only, or of wood and turf together, they are, with few exceptions, of the same type everywhere throughout the island. They are small oblong buildings, with no more architectural design than a barn. The entrance is at one end, and from it a passage between rows of open seats leads to a square space at the other, in one corner of which stands the pulpit, and in the middle the altar-table is railed in. Above the altar there is generally hanging, or painted on the wooden wall itself, a rudely daubed picture. The one here represents the Crucifixion: the scene is laid in a valley between snow-covered mountains, with a large house on the left, forcibly reminding me of a print that I have seen of the Great St. Bernard Pass. Sometimes, though less frequently, the panels of the pulpit are also painted. The churches are often so low, that the head of a person standing in the pulpit is above the beams which support the roof. Some of them have a loft running half-way down their length above the beams, used as a repository for the saddles, nets, dresses, and such like things of the families who live at the houses adjoining; where there is no such loft, the things are hung upon the beams themselves, or on nails driven into the walls. It seemed strange at first to use the churches as sleeping and living rooms; but we soon got used to it, generally making up our beds in the space on each side of the altar-rails. And since the churches are in most places kept in good repair, and are usually cleaner and more airy than the houses, we always preferred them to sleep in, when we left our tent for the shelter of a roof.

August 16th.—Although the hurricane had somewhat abated its rage, yet the wind was still strong and furious;

but not enough so to deter us from proceeding. We left Bjarna-nes at 11.30 A.M., and after skirting the hills to the N.E. for some distance, turned towards the S.E. across the Laxár-dalr, a large, flat valley, for the most part fertile, but in places sandy and barren. About 1 P.M. we reached the little farm of Thinga-nes, which lies beneath a high and steep ridge of mountains, that, running out from the base of the Heina-bergs Jökull, continues in a southerly direction to the sea, there ending in the point called Vestra-horn (West Foreland). Under this ridge, which forms a complete barrier between Laxár-dalr and the country to the E., we rode for some distance over rough, rocky ground, close to the sea. Sometimes the rocks were strewn so thickly that we were obliged to ride into the water to find a passage. After half an hour over this sort of ground, we suddenly turned towards the N.E., up a steep narrow path, which led obliquely up the face of an almost precipitous slope in the ridge, to the Almanná-skard (All men's gap), a mountain pass, by which alone the range can be crossed. The mountain side, up which the path runs, consists of loose rocky débris, and stones, which have fallen from the heights above, that ever threaten to sweep it with fresh avalanches. The horses, as they passed along, set in motion, and sent clattering down the mountain, heaps of loose débris. Sure-footed as they were, it required all their agility to prevent themselves from sliding down with the slipping ground they trod upon. On reaching the top of the pass we came to a mountain valley, which sloped gradually down towards the N.E. to a level plain lying at the base of the range. The mountains on each side were very fine, many of them consisting of immense, perfectly-shaped pyramids of whitish basalt. Riding down into the valley, we passed, along the shores of Papa-fjodr, a narrow bay,

extending for many miles along the coast, and bounded seawards by a long flat bar of sand, which runs in an almost unbroken line between Vestra-horn (West Foreland) and Eystra-horn (East Foreland).

When we reached Vola-sel, a farm in the plain, we had to obtain the services of the farmer to guide us across the often dangerous Jökulsá í Lóni. He was out in his hay-grounds when we arrived, but, on being summoned, at once left his work. As his horse had to be caught and saddled, we accepted his invitation to come into his house and take coffee. The house was the poorest that I saw anywhere in Iceland, and very dirty. Entering it through the low door in the thick turf wall, we stepped down to the floor of the low-roofed entrance-passage, which, as in all Icelandic houses, was sunk a foot or two below the level of the ground outside, for the sake of warmth. After groping our way along this passage in complete darkness, we came to a door which led us up a pair of steps into the general living and sleeping room of the whole family. It was a long, low, narrow, mud-floored room, along one side of which was placed a row of low bed-straddles, covered with thin mattresses and coverlids. Here slept all the family—men, women, and children—in the same room. Everything in it bore unmistakable signs of squalid poverty.

Upon the beds were lolling two or three girls, and as many children were playing on the mud floor. In one corner was a fire, over which the goodwife was stooping, engaged in cooking something, which did not improve the stifling atmosphere of the room. The only light that found its way into the chamber at all, struggled faintly through a little glass pane, placed high up in the four-foot thick turf wall, and no air could enter except through the door and along the passage. Passing through this room, we were shown

into another about six feet square, containing a small table, a bedstead, and a wooden chest, as its only furniture. On pegs in the walls were hung the clothes, &c., of the different members of the family, and upon the window-ledge stood the bottle of corn brandy and its one companion wine-glass, which are almost always to be seen in the guest-room of every Icelandic farm-house. The window itself was rendered impervious to the weather, by being made so fast as to defy all attempts at opening it. The closeness in both these rooms was intolerable, and we were glad to escape again into the open air. In front of the house a large heap of Icelandic moss (*Fjalla-grös*) was drying for winter use.

The *Jökulsá* was much flooded, and we had to ride two or three miles up the valley before we were able to cross it; which, however, we did without difficulty, although its width is considerable. After riding some distance across the flat plain, through which the *Jökulsá* runs, at 8.15 P.M. we entered the *tún* of the priest of *Stafa-fell*, and again took up our quarters in the church. The priest himself was not at home when we first arrived, but on his return he at once came out to welcome us. "*Salve, domine!*" I hear, shouted out in a jovial voice, as I stand in the church-yard, and, turning round, see his reverence in his shirt-sleeves, and hatless, his long gray hair tossed about in the still furious wind. "*Salve, domine!*" and he grasped my hand with the cordiality of an old friend, nearly tumbling headlong into me, as he stumbled over a grave in his eagerness to welcome me. Then, after putting some question to Olaver, and making a remark to himself *sotto voce*, away he rushed again, and, diving through the low doorway of his house, soon reappeared, followed by two of his women-servants, struggling against the wind towards the church, beneath mattresses and beds of eider down.

By the time our beds had been made to our host's satisfaction, it was quite dark, and he lighted for us the two large tallow candles which stood in massive brass candlesticks upon the altar. Then away he dashed into the darkness, again to appear after a short time, when, seizing one of the candlesticks, and bidding Olaver take the other, with more words of welcome he invited us into his house, and we were soon seated at his table, supping off a well-cooked dish of mutton, washed down with copious draughts of warm new milk.

August 17th.—"Bonus dies, domine!" shouted our host, whilst yet a dozen yards off, as he skipped over the graves towards us, soon after we were up. He then invited us to come in and take coffee and breakfast—for in Iceland coffee always comes before breakfast. Indeed, it properly comes the very first thing in the morning. Whenever a guest passes a night in an Icelandic house, he is awoke in the morning by the entrance into his room of one of the women of the house (generally the wife or daughter of his host), with a cup of coffee and a rusk, which she deposits by his bed-side.

The priest sat down to breakfast with us, and we chatted away of England and Iceland as fast as we could make each other understand. When, after breakfast, we were starting again on our journey, all the family came to see us off, and we found that the priest and two of his sons intended to ride some way with us. When we bade adieu to our kind entertainers, Shepherd made one of the boys a present of a knife, and narrowly escaped being kissed by all the family circle in token of their gratitude.

A curious mountain forms the principal feature in the view from Stafa-fell. It is the end one of the range that runs out to the Vestra-horn, and is split into three irregular pyramids,—the two outside leaning over towards

the centre. It is several miles distant from Stafa-fell, on the other side of a perfectly flat plain.

After riding with us for some distance, the priest turned back with one of his sons, leaving the other to guide us to Hof, where he advised us to stay the night, promising us that we should find the priest there a "*vir egregius*."

When we reached the eastern end of the plain, in which Stafa-fell is situated, our path took us over a rugged field of rocks, which lay at the foot of the mountains, and extended quite down to the sea; so that, in several places, we again found it better to ride through the water. Leaving the plain, we ascended a rocky way up the mountains, by the side of a pretty stream, full of leaping falls and rocky pools and rapids, to the top of Lons-heidi. Near the top, a good-sized fall of water leaped over the rocks into a dark pool beneath, a depth of thirty or forty feet. As we approached the summit of the pass, a cold misty rain began to fall, which, driven by furious gusts right into our faces, prevented us from seeing far into the dreary waste of the Heidi.

After some time we descended from the high ground into the plain of Starmyra, lying to the E. of the mountains we had just crossed. In the descent, our road ran by the side of a dark and boisterous mountain torrent, that rushed down from the hills between high walls of rock, and flashed over many a foam-whitened rapid. At more than one spot, I observed running out from these walls very striking basaltic dykes; and near the bottom of the descent we had to ride down a natural staircase, over the tops of upright basaltic columns, which few but Icelandic horses could have managed to descend. It was very like riding down the steps at the Giant's Causeway. After galloping across a sandy plain, washed by a Jökulsá, which flows from Hof's Jökull, we arrived at Hof about 5.30 P.M.

As we approached the house, the boy rode on to tell the priest of our arrival, and no sooner had we pulled up close by the tún, than a rather short, elderly man, who turned out to be his reverence in person, rushed out of the house towards us with outstretched hands, shouting at the top of his voice, "*Engelskman vescu! Velcom Engelskman! In domicilium meum vescu!*" We dismounted, and followed him in, and were soon at home with the hearty old gentleman, who seemed quite delighted to have us there, and before long had placed before us a substantial supper of fish,—soles, flappers, and hard-dried cod.

The "*vir egregius*" had forgotten most of his Latin; but he still remembered a few words, and with the sweeping invitation of "*omnium bonum*" he invited us to accept his hospitality. According to Icelandic custom, we were waited on by the wife and daughter of our host,—the former a large-sized, kindly matron, though not a little dirty; the latter a stout blooming girl of one or two and twenty, who looked as if she had all the health of Iceland in her rosy cheeks. We talked of Henderson, of whom the old priest had never heard — of Gaimard, whose expedition in 1836 he well remembered — and of Col. Shaffner's and Dr. Rae's Atlantic Telegraph expedition of the year before (1860), of which he had heard from the people at Djúpi-vogr. He himself had never seen an Englishman before, and we were great objects of interest to him and his wife, who, when not employed in waiting, stood behind his chair, and from time to time took a pinch of snuff from out of her husband's proffered box. We contrived to carry on a lengthened conversation in as much Icelandic as we were masters of, interlarded with Latin words and sentences.

The Icelandic priests neither talk nor understand Latin so well as I had anticipated,—indeed, very few of

them could speak it at all grammatically, and most of them knew only a few words. Their attempts were often very amusing; but the most amusing of these futile efforts was made by a priest living in the eastern district, at whose house we stopped one night. He was a farmer, like most of his brother priests, and had heard or read of the efficacy of mowing machines, and was ambitious enough to wish for one himself; not thinking, simple man, but that they would cut the little thin crop of an Icelandic tûn, as well as they lay the long, heavy grass swathes of an American prairie or an English meadow. He introduced the subject in these words — “*Suntne in Americis machinum graminum explorandum?*” — a sentence which I should probably have had some difficulty in interpreting, if it had not been accompanied by an explanatory gesture. But for his excuse, I must say that he did not profess to have kept up his classical learning, or, to give you his own words, “*multum neglexi Latinum loquere.*”

When bed-time came our host offered us a bed either “*in domicilium meum*” or “*in templum Dei.*” Upon our choosing the latter, he sent out mattresses for us into the church, and made up very comfortable beds there. Just as we were getting into bed, the blooming daughter made her appearance with a large basin of new milk, which she deposited on one of the seats near the altar, and then, wishing us good night, left us to our dreams.

August 18th.—Being Sunday, we stopped the whole day at Hof. At breakfast we were joined by a son of our host, a young man who was also a priest. Yesterday he was out making hay in the marshes near the sea, and only returned home late at night. The day was stormy, and the priests in consequence did not expect that any body would come to church; but nevertheless, about 1 P.M., several men

having ridden up for mass, the old priest sent a man out to ring the church bell, whilst he changed his dress and prepared himself to perform it. Since the nearest house was at a distance of two or three miles off, the bell was not likely to collect a congregation; but a few more persons arrived before service commenced. As each of them entered the room in which we were sitting, the bottle of cognac that stood on the window-sill, with its one companion wine-glass, was in constant requisition: for the old priest treated each member of his congregation, as he arrived, with a glass of cognac, helping himself each time he did so to a like potion by applying his own mouth to that of the bottle.

In Iceland, owing to the distance at which most of the people live from the church, there is only one service on Sundays, and it begins about mid-day, or as soon afterwards as a sufficient number of persons to form a congregation have arrived. On this occasion, as soon as half a dozen persons had collected together, our host, followed by his congregation, went into the church. We were detained in the house by his son for a quarter of an hour after the service had commenced, and I was on the point of reminding him of his promise to show us where we should sit in church, when the cause of the delay was cleared up by the appearance of his sister with a cup of coffee for each of us. We had only been waiting for this; and having finished it, were at once conducted into the church, our bed-room of last night. We found our host (the *vir egregius*), standing within the altar-rails, dressed in surplice and stole, with a large red and gold cross upon his back. The altar was covered with a worked cloth, and the two candles upon it were lighted. The Icelanders are in creed Lutherans, and almost the whole of their church service is chanted,—the

priest sometimes singing a solo, at others the congregation joining in the chant with him. The congregation took their part in the singing with greater goodwill than harmony; but throughout the service they all appeared to be very attentive. We were much amused by a little incident that took place. Whilst the service was going on a servant-girl from the house entered the church, and took down from the pegs on which they were hanging two bundles, covered with coloured handkerchiefs, which from their shape evidently contained bonnets. She carried these out of the church, and soon afterwards we saw our host's wife and daughter come in, each wearing a bonnet of the latest Copenhagen fashion, surmounted by quite a garden of artificial flowers. After the sermon, which came near the end of the service, there were a few short chants, and then, having dismissed the congregation with a blessing, the priest took off his vestments, and shook hands with us, one after another, all round; the bell was then again rung, and we all left the church.

August 19th.— We started again this morning under the guidance of the young priest, who kindly volunteered to ride with us half our day's journey, and show us the way. We first rode down to the lower end of the valley in which Hof is situate, thence we passed along the sides of bold rocky hills running out between Alfta-fjordr and Hamars-fjordr. The latter is a very pretty and bright-looking bay, lying in a semicircular basin of green terraced mountains. Seawards it is protected by several groups of small islands, studding its entrance. Beyond these we could see the white-crested coursers of the ocean driven furiously along by an easterly gale. The blue waters of the fjordr beneath us seemed to be unconscious of the raging wind. Their bosom only heaved gently, like that of one in a calm sleep. But round the

corners of the mountain the wind blew so tremendously, that sometimes we could scarcely make way against it, and the waterfalls above us, many of them of no inconsiderable size, were actually blown upwards and dispersed in spray, without appearing ever to come to the bottom of the cliffs. At the head of the fjordr we had to cross a deep, though not dangerous river; on its eastern bank stands the farm of Hamar, which gives the fjordr its name. We reached it at 3.30 P.M., after a ride of five hours from Hof. Here the priest bade us farewell and started back home. We engaged the farmer to be our guide to Beru-fjordr, and proceeded along the N. side of the fjordr as far as Hals, which was the first place where we could cross the steep mountain range which separates Hamars-fjordr and Beru-fjordr. About three miles from Hamar our road crossed a steep slope, called Rauda-skrida, consisting of red volcanic débris, the pieces of which looked very much like bits of broken tiles and burnt earth. Two miles further on we came to Hals; here we turned up a steep track, that led us across the mountains and descended into the valley of Beru-fjordr, some two miles above the little Danish settlement of Djúpi-vogr (Deep Bay). From the top of the pass we could just see the masts of a ship safely riding at anchor in the harbour, heedless of the gale that raged outside. Djúpi-vogr is (I was informed) at present a very small settlement, containing only three or four houses; but, being the first safe harbour along the southern coast to the E. of Cape Reykja-nes, it is an important place. We proceeded along the shore of the fjordr in a N.E. direction towards its head. It is bounded on both sides by steep mountains; from those beneath which we were riding, large masses of rock had fallen down, and strewn our path with their débris, or rolled on into the water, and become gardens for the seaweed which clung to them in

tangled meshes, and under their cover were flocks of eider-ducks sheltering themselves from the wind. We reached the farm of Beru-fjördr, at the head of the fjördr, soon after 9 P.M.; and after a supper, in the house, off salmon-trout and eider-ducks' eggs hard-boiled, we made up our beds and turned in to sleep in the church.

4. FROM BERU-FJÖRDR, BY WAY OF BRÚ, MY-VATN,
AND SURTS-HELLIR, BACK TO REYKJA-VÍK.

August 20th.—The morning was fine, although light clouds of mist hung about the tops of the mountains. The calm blue fjördr, running away seawards beneath its green terraced hills, looked very lovely. The tops of the hills on the N. side of it are weather-worn and serrated, here and there rising in rocky aiguilles and minarets encircled, when we saw them, with wreaths of snow.

We left the farm at 10.40 A.M., and ascended a very steep hill close behind it to the N. This ascent was so difficult that we were obliged to dismount; but the way in which our horses climbed was astonishing. Now they were on steep slippery rocks—now they followed one another along an almost overhanging track—now they zigzagged up banks of loose soil, and in some places we could only scramble up after them on all-fours. On this hill we found a great number of zeolites. These are beautiful crystals, circular in shape, and having bars or spicula, often as fine and delicate as hairs, radiating from a common centre to their circumference. It is not uncommon to find two of them connected at the circumference. When broken they generally form very pretty segments, terminating in pyramidal points.

As the day advanced it became like one of those dull days, not uncommon in our English autumns, which colour everything with a cold grey tint. Such a day exactly suited the scenery that surrounded us when we reached the top of the mountain. We found ourselves upon an extensive heidi, called Breid-dals-heidi, for the most part a flat, uninteresting waste of sandy and stony ground. Everywhere, from the withered grass in the sand marshes close at hand, to the stony hills in the distance, the whole of the country that we could see assumed the same dull grey-brown colour. The only relief to the eye was in the vividly green patches of moss that grew here and there. At length we came to the Mulaâ, a small rocky stream, running in a northerly direction. The mountain which, on the side of our ascent, rose almost precipitously to the height of nearly 1300 feet above the sea, sloped gently down towards the N., and we followed the course of the Mulaâ for nearly eight miles before we reached a small lake which lay at its foot.

Here, for the first time in the day, we were able to put our horses into a gallop, and in about an hour reached a field on the banks of the river, where a great number of men and women were at work hay-making. Amongst them our fylgdar-madr recognised the priest of Thingmuli, at which place we intended to stop the night. The priest, when he heard of our intention and who we were, immediately had his horse saddled and rode home with us, where he made us welcome with all the hospitality his house could afford. He was a well-read and gentlemanly man, and talked Latin grammatically and fluently. He could not speak English, nor understand it when spoken, but he had read a little of it; and from out of his small store of books he produced "The Vicar of Wakefield," and two or three other English books, and was very glad to get a lesson in English reading from us.

Dr. Rae and Col. Shaffner had passed a night in his house the previous year (1860) whilst on their expedition in connection with the North Atlantic Telegraph, and our host was especially interested in the success of the adventure; being very anxious that the line selected should be that which has been proposed along the N. of the Vatna Jökull, although he was somewhat sceptical as to its practicability. We again made the church our sleeping quarters.

August 21st.— The morning was very bright and warm, and the sharp lines that marked the edges of the lights and shadows on the mountains and in the valleys produced a very beautiful effect.

Thing-muli lies at the foot of a steep *mull*, between the fork formed by the confluence of two streams, which, after descending separate valleys, are here united. The river thus formed flows northwards down a long narrow dale, inclosed by steep mountain-ridges. Such dales and mountain-ridges form the principal feature of the eastern district of the country. Any one who looks at a map of Iceland will see that the E. and N.E. part of it is transected by numerous rivers, flowing northwards in long straight courses. These are, in most instances, glacier streams, originating in the Vatna Jökull. The valleys down which they flow are generally narrow and deep, and are separated from one another by mountain-ridges, formed by spurs projecting from the high-lands in the interior of the island. The sides of these ridges are steep and bold. Their tops are often table-lands, and for the most part barren; but the valleys are fertilised by the rivers, and the mountains on each side have long triangular strips of vegetation running up them.

We started from Thing-muli at 10.40 A.M., and after a pleasant ride for four or five miles down the valley, crossed the ridge on our left, and descended through a forest of

low dwarf birch trees to Hallorm-stadr, a farm situate on the E. bank of Lagar Fljot. The Fljot is a glacier stream, which, a few miles to the S. of Hallorm-stadr, widens into a narrow lake, having little or no current. It retains the same character for a long distance towards the N. The whole of the district in its vicinity is thickly studded with farms, and is considered one of the most flourishing parts of the island. The pasturage grounds here are fertile and extensive, and the large forests of birch-wood afford to the inhabitants opportunities of obtaining a supply of fuel such as few of their countrymen can enjoy.

From Hallorm-stadr we rode up the course of the stream through a very extensive forest of dwarf birch — extensive for an Icelandic forest,—for in England we should scarcely deign to call it more than a grove. The trees in it, however, were the tallest that I saw in Iceland, some of them being at least twenty feet high.

At the top of Lagar Fljot the river is deep and the current strong, and the only way to cross it is by swimming the horses. But by going three miles farther up the valley, we forded it without difficulty above its junction with one of its tributaries.

We reached Valthjóf-stadr at 5.15 P.M., and were, as usual, kindly received by the priest. His hospitality was not confined to giving us a good supper and providing us with well-made beds in the church, but, as we were on the point of retiring for the night, he brought us into the church a whole box full of cigars, and, having deposited them on a window-sill within our reach, bade us good night. He had seen us smoking a short time previously, and imagined that we might be “smoke-hungry” again before morning.

August 22nd.— We were delayed some time by one of

our horses having strayed during the night. When at length we had found the truant, we started again, accompanied by the priest and one of his sons, who acted as our guide. The day was bleak and windy, and Snæ-fell, whose fine, pointed top we had seen the previous day standing out cold and white against the faultless blue sky, was now shrouded in clouds. After riding about four miles up the valley on the W. bank of the river, we turned sharply to the right, and with much difficulty climbed a steep zigzagging ascent up the ridge on that side. At the top we found an extensive barren plain. Over this we rode for more than four hours, passing several small lakes. Our route was marked out by *vardar*, small heaps of stones; much of it was over sand and stony land, but in places the ground was swampy. We descended from the ridge by a path almost as steep as our ascent had been, and at 6.45 p.m. we reached a little farm called Vad-brekka, in the valley beneath. Here the priest and his son bade us farewell; but the priest insisted upon our stopping to take a parting cup of coffee with him, and this delayed us so long that we did not reach the Jökulsá á Brú, which is only half an hour's ride from Vad-brekka, until 8.15 p.m., when it was beginning to get dusk.

The farm of Brú (Bridge), where we intended to stay the night, was on the far side of the Jökulsá, which is here about seventy feet broad, and flows with a strong current. The channel of the river is deep; its sides are formed by rocky precipices of from twenty to thirty feet in height above the water. Opposite to Brú, a kláfr, or swing-bridge, is thrown across the chasm, but it would only carry us and our baggage across, and we had to drive our horses some way farther up the stream, where its banks were lower, and make them swim over. Having done this, we returned to the kláfr, in order to cross the river our-

selves. This swing-bridge, although a rude and primitive contrivance, is of sufficient importance to give its name of Brú both to the farm and the river. It consists merely of a wooden box, only just sufficiently large to carry a man and an ordinary horse burden (that is, about 2 ft. wide, 2 ft. 6 in. long, and 2 ft. high), suspended above the stream by means of two ropes, which run at each side of it, through holes in upright posts placed in its corners. The ends of these ropes are secured on each shore to beams of wood, which are kept in place by a number of heavy stones heaped up round them. A third rope is fastened to each end of the box, so as to admit of its being drawn



KLÁFR.

backwards and forwards by a person on either side of the river. We found the kláfr fastened to the beam on the far shore, and all our attempts to haul it across to our side proved unsuccessful. Here was a dilemma: we were left with our baggage on one bank of the river, and our horses were on the other, but there appeared no way of getting across it ourselves; the farm was too far off for us to make the people hear, and every minute it was growing darker and darker. At length our fylgdar-madr hit upon a plan to get us out of the difficulty; by getting astride upon both ropes, and working himself on by his hands, he managed with a good deal of difficulty to reach

the far shore. There he unfastened the kláfr, and we drew it across, and getting into it one at a time with a load of baggage, all crossed the river in turn. The kláfr is not a very pleasant sort of bridge. Owing to the slackness of the ropes, the box slides down rapidly till it comes over the middle of the stream; there it stops with a sudden jerk, quite enough to throw a person who is unprepared for it overboard into the angry curdling waters beneath. But the last part of the passage is the worst; for one has to haul oneself up the sloping ropes to the shore; and this was no easy work, even although we had the assistance of the fylgdar-madr, who was stationed on the shore to which we were going. By the time we had all crossed it was quite dark. So, leaving our boxes on the bank of the river, and our horses to take care of themselves, we proceeded up a grassy slope to the farm, which is only about five minutes' walk from the river. After supper we retired to rest in the small church.

August 23rd.—After riding up a long sloping hill to the N.W. of the boer, we came upon Jökul-dals-heidi, one of those dreary wastes which are so common in Iceland. On our way up the hill we met a long string of horses returning to Brú from the heidi, so laden with hay that they were nearly hidden under their loads, and looked like walking hay-cocks. The hay consisted as much of twigs and leaves of dwarf willow as of grass. I observed that the pegs on the bearers, upon which the loads were hung, were in many cases made of reindeer's horn, and on questioning the farmer, it appeared that he often picked up the horns of reindeer in the heidi. He had never seen the deer themselves, except in winter, when the ground was covered with deep snow, and he had never attempted to shoot them. Judging from his finding so many horns, reindeer cannot be very scarce in this district. The heidi

would have been quite barren except for low scrub-wood of dwarf willow here and there, and a few green swamps round the shores of several small lakes that we passed. On most of these we saw two or three pairs of wild swans swimming about; but the wary birds kept too far out from shore to allow of our getting a shot at them.

After a ride of several hours, our path led us down a steep declivity into a narrow valley, most desolate and gloomy. The soil of the valley, and that of the hills which inclose it, consisted of dark volcanic shingle, lying amongst tracts of black sand; the only vegetation to be seen was a scant plot of mélr, and everywhere else the black earth was quite barren. The spot appeared to be shunned by every living thing; no footmark of any beast could be discovered upon the loose sand; not a bird could be seen hovering along those dismal hill-sides. The valley seemed to stretch for miles away towards the S., right into the heart of the country. We rode across the head of it and up the hill on its far side; the descent was very steep, and we were obliged to dismount and lead our horses. At its foot we came to an extensive tract of black volcanic stones and sand: no traces of life or vegetation relieved the dreary barrenness of the scene. Whichever way we turned our eyes, we saw only a gloomy wilderness extending over the bare, black, stony hills that surrounded us. Over this desert we rode for several hours in a westerly direction, at one time crossing an immense level plain, at others descending gradual declivities or steep slopes. Before us a steep range of hills stretched across our path. As we approached these, I was puzzled to know how we were to get across them; there appeared to be no way of doing so, except by making a circuit of several miles, but our guide continued to advance straight towards them, leading us along the deep

worn bed of a dried up river. At length, when we came quite close to the ridge, there appeared before us in its side a broad fissure of from twenty to thirty feet in width, extending from top to bottom, into the mouth of which we rode, and found ourselves in a very singular causeway. The floor consisted of gravel and small stones, and it was evidently the bed of a winter torrent, though when we passed, only a small stream flowed through it. Its sides were high precipitous walls of igneous rock, having the angles of their projecting masses clear-cut and square above, but worn by the stream near their base; the fissure was not straight like the Almannagjá, but had several sharp turns and windings in it. In about ten minutes' time from entering this gjá we emerged on the sandy plain of Mödru-dalr. In almost every part of it were numerous hillocks of sand, covered with luxuriant crops of mélr, which looked quite cheerful after the barren scenes through which we had been riding so long. We reached Mödru-dalr at 5.15 P.M. Some three or four miles from it a line of isolated rocky hills, which had the appearance of extinct craters, ran out from the mountains on our right towards the centre of the plain; they were none of them of any great height, and each one diminished in proportion to its distance from the mountains. We could see a similar line of hills at some distance on our left. We were received at Mödru-dalr with even more than common hospitality by Mr. Jónson, the intelligent owner of the farm; he is a wealthy man, having very large flocks of sheep, which find ample pasturage on the banks of the neighbouring Jökulsá.

August 24th. — Our host this morning pointed out to us our old friend the Knappur, far away to the S., across the whole breadth of the Vatna Jökull. If our attention had not been called to it, we should probably have missed seeing

the mountain, in the intense glare of the snow-blink which hangs over those immense fields of ice. But there was no mistaking the shape of his white crest, which we could distinctly make out, although the distance could not have been less than eighty miles. He seemed to be far higher than any other mountains that lay between him and us. This circumstance leads me to believe that there are no high mountains in the central and northern part of the E. end of the Vatna Jökull,—an opinion which is confirmed by the fact, that Mr. Paulson, in his ascent of the Oröfa Jökull, descried the summit of Snæ-fell towards the N. The most striking feature, however, in the view from Mödru-dalr is the great volcano, Herdu-breid (Broad Shoulder). This noble mountain, which is only about thirteen miles distant, rises from amongst a bevy of small hills, that are grouped around its base, in the middle of an extensive flat plain, to the height of more than 5500 feet. Its appearance is very singular. Its lower part appears to be cylindrical, and for a long way up its sides are nearly vertical precipices of rock. These are surmounted by a squat cone of perennial ice and snow. A snow-capped mountain has often been compared to a cake coated with sugar, but in no case could this simile be nearer the truth than in its application to Herdu-breid. An uninteresting ride of four hours and a half from Mödru-dalr, for the most part over a desert abounding with sand hillocks, brought us to Grim-stadir. The farm here is a little oasis, standing on a small sandy plateau above the level of the surrounding desert, the sides of which are so blown and washed away by wind and storm that we had some difficulty in finding any way up to it. But the tún upon the top of it appears to be pretty good land. There being no church here, we pitched our tent and made it our sleeping quarters, taking our meals, however, in the bæ.

August 25th.—Being Sunday we stopped at Grim-stadir. The view of the surrounding country is extensive, but one of the most desolate that can possibly be conceived. On the E. is a continuation of the gloomy desert mountains that we crossed between Brú and Mödru-dalr; on every other side are extensive sandy plains, beyond which rise “a number of fantastically shaped volcanoes, that crowd the scene in almost every direction.” Herdu-breid, with his precipitous sides and ice-covered summit, forms the chief feature in the landscape. Beyond the farm the eye wandered in vain over hill and plain to seek for any traces of vegetation.

There is no church nearer to this place than Mödru-dalr, and service is only performed there once in three weeks. This was not one of the days for it, so the family could not go to church; but the farmer, as the head of the family, about mid-day summoned his relations and servants into the bær, where they read together portions of the Bible.

August 26th.—We left Grim-stadir about 10.30 A.M., and rode for an hour in a north-westerly direction through the sandy desert until we came to the banks of the Jökulsá Axarfirdi, a deep and swift river, over which there is a ferry with a boat on each side. After swimming our horses across, and transporting ourselves and our baggage over in one of the boats, we again mounted, and proceeded westwards across the plain towards My-vatn. A strong wind blowing right in our teeth carried clouds of sand with it, like a simoom, making our ride very disagreeable. The small black particles filled our eyes, noses, mouths, and ears, and our faces soon became almost as black as sweeps.

Not very far from the Jökulsá is a curious insulated volcano, now extinct, and, so to speak, in ruins; for its

eastern side has fallen away, and left an opening into the circular hollow of the crater. It is called Hrossa-borg (Horse Fort), from its looking like a fortress, and having been used to drive horses into. After riding some distance the plain became less sandy, and was covered with a low vegetation of dwarf willow, birch, and juniper (*Juniperus nana*). Beyond this an ancient flow of lava, which has in bygone ages overrun the plain, still presents a scene of desolation. In some places it is remarkably flat, and forms a level pavement for several hundred feet square: in others it crops out from the soil in irregular waves of stone, or opens in gaping fissures, and exhibits large chasms beneath its surface. For the most part it is bare, being discoloured, rather than covered, with a grey moss, corresponding well with the hoary tints of the lava itself. But here and there, where the sandy soil has collected upon it, grow plants of dwarf willow, birch, and bláberry, their leaves, now turned bright red by the touch of Autumn's finger, contrasting prettily with the hoary grey of the lava.

At 4 P.M. we reached the farm of My-vatn-sel, on the W. side of the desert, and as we approached it we saw a number of steam-jets rising into the air at the foot of a line of low brown hills that rose before us. These were the well-known Sulphur Mountains of My-vatn. The steam-jets marked the Námar, or boiling mud-pits, at their base. We were now within a few miles' distance of Krabla, which stood out prominently amongst a number of volcanic hills on our right. On our left in the distance were three or four remarkable insulated table-mountains with very steep sides, whilst farther off the massive Herdu-breid towered against the sky. From My-vatn-sel we rode over a hilly tract of sand and stones for about a couple of miles, then, crossing a black field of jagged lava, very old and rotten,

we came to the foot of the Sulphur Mountains. Since we intended to stay several days at My-vatn, we reserved our visit to the boiling mud springs for a future occasion, and proceeded at once up the steep brown clay banks that form the sides of the mountains, and through the Náma-skard, a deep-cut winding gorge that leads across them.

After riding through this gorge under uneven banks of reddish-brown clay and bolus for nearly half a mile, we reached the western brow of the hills. Immediately beneath us lay a plain of sand and clay, in every part of which hundreds of little mounds of red and yellow clay were steaming and smoking as if they were the chimneys of Vulcan's forge itself. Beyond the plain extended My-vatn (Gnat lake), the second largest lake in the country, full of dark islands of lava.

We descended amidst steaming mounds of hot clay and beds of sulphur efflorescence, relieving the barren hill-side with its bright yellow colour. In one place stood a great lump of it weighing several hundred weight, and there were patches of it on every side of us. The mineral here is very pure and might easily be worked; but the cost of carrying it to the nearest port over such a rough country, where there are no roads, has as yet offered an insuperable obstacle to the undertaking.

We proceeded under the ridge of hills which form the continuation of the Sulphur Mountains over another rugged lava-field, full of gaping fissures and caverns, bridged over by arches of the lava, until, suddenly rounding a corner of the hills, we found ourselves at Reykja-hlid, our destination.

The farm of Reykja-hlid lies at the N. E. corner of the Lake of My-vatn, almost in the midst of a solid stream of lava, which was poured down by the neighbouring volcano of Leir-hnukr in the year 1725. The spot where it stands

was formerly a fertile meadow, but the whole plain on the N. and E. shores of the lake was devastated by the ravages of this eruption. Not only did the boiling flood overflow the land, but it continued its course into the lake itself, forming in it numerous little islands, and to a great extent filling it up. The fiery stream came pouring over the low hills just at the back of the boer, and destroyed it, as well as the surrounding meadows. The church escaped destruction in a manner that appears almost miraculous. The molten river ran on straight towards it, and in a few yards more would have reached the wall of the little churchyard, when it diverged into two streams, which, pursuing their course round the churchyard, were united again almost directly after passing it, and flowed on into the lake.

This lava stream, which is described as having run slowly along, appears to have become very viscous by the time that it reached the shores of the lake. In most places it presents the appearance of large vapour-distended domes, rising like big blisters. The surface of these is marked with little circular elevations, which Henderson has well compared to the coils in a roll of tobacco. Beneath the thick slabs, which form the surface, the lava is generally hollow, and in many places has fallen in, leaving exposed dark arches and caverns.

We made Reykja-hlid our quarters for a week. It was not our first intention to have stopped there so long, but for the first four days the weather was so bad that we were not able to do or see very much. A cold northerly wind brought with it continuous storms of snow, sleet, and rain, and winter seemed regularly to have set in. However, on the evening of the 30th, the wind got round to the S.E. and cleared away the storms. That night there followed a sharp frost of between -5° and -6° C. (or

23° and 21° Fahrenheit,) and the morning of the 31st turned out gloriously bright, with a clear crisp air. The ground was covered with snow, four or five inches deep, sparkling in the sun like myriads of diamonds. Every ridge and gully of the whitened mountains on the far side of the lake were mirrored in its still waters; the Sulphur plain sent up its innumerable little jets of steam straight into the breathless air; and the dark gloom on the lake and the lava-fields and deserts was all dispelled.

After breakfast we started for Krabla under the guidance of a boy from the farm, and of Olaver, who had been here the previous year, our road as far as the Námar being the same as that by which we came. In passing the Sulphur plain we stopped to examine the steaming excrescences of clay. The approach to them is over beds of sand and clay, out of which they rise in variegated blotches and pustules of blue, white, red, and yellow, all the colours being mixed indiscriminately together. The clay is of about the consistency of soft putty, and so hot that you can scarcely bear your hand upon the surface. A few inches underneath it is too hot to touch. In many places it is covered by a hardened scab, over which you must tread warily, or you will go through into the loose burning soil beneath. About an inch below the crust is a layer of pure sulphur, produced by the sublimation of the sulphurated vapours rising through the ground. On every side are hundreds of these coloured tumours steaming like mimic volcanoes.

Passing through the Náma-skard, and reaching the eastern base of the hills, we turned northwards over a tract of sand and slag, keeping the range of hills on our left. They are here covered with dwarf willow and birch, upon which we saw a few goats browsing. After a short distance we came to a stream of lava, descending the valley from the mountains lying to the N. We rode up the

eastern side of this, and after some distance mounted a ridge connecting Krabla with Leir-hnukr. This ridge, as well as the sides of Krabla, was blotched with steaming patches of red and yellow clay; in a gulley on our right, half-way up the mountain, a large steam jet rushed out of the ground with a loud harsh roar, and all around there were unmistakable evidences of the terrible nearness of the subterranean fire.

A short but hard pull up a steep bank brought us to



HERDU-BREID FROM KRABLA.

the edge of a deep circular basin, evidently an ancient crater, on the S.W. side of Krabla, at the bottom of which, more than fifty feet below us, lay a deep pool of bright blue water, intensified in colour by the contrast of the white snow which covered its steep banks. The water is now cold and quiescent, but when Henderson visited it he found it a boiling cauldron "of black liquid matter, from the middle of which a vast column of the same black liquid was erupted with a loud thundering noise." There is still close above it another small pool, in which the

water boils and steams continually, but no eruptions take place. We sent our horses round the mountain into the valley between it and Hrafn-tinnu-hryggr, the Obsidian mountain, whilst we walked to the top. The view from the summit was certainly striking, but not nearly so fine, I think, as that from Hlidar-fjall, which we ascended subsequently. The most striking feature was the plain between the Jökulsá Axarfirdi and the Sulphur range, with the high table-mountains I have before mentioned, and Herdu-breid looming in the distance. The accompanying sketch is one that I took from the top of Krabla.

We descended the steep slopes of the mountain into a valley on the S.E., which separates it from Hrafn-tinnu-hryggr (Raven-flint-back), the well known Obsidian mountain. The sun had already melted the snow on the hill-tops, and the large blocks of obsidian were glittering like the diamond mountain in some fairy tale. No better description of Hrafn-tinnu-hryggr can be given than is to be gathered from its name. It is a long sharp-edged dorsal ridge, running from N. to S., and consisting for the most part of obsidian or volcanic glass. This is a highly vitrified stone, in many respects resembling lava, but in appearance like opaque glass or flint. Its colour varies from a raven black to a smoke grey, but some pieces that I picked up contained tints of olive-green and jasper-like red. Many of the blocks are full of minute vesicles, others are perfectly compact. The blocks which are strewn on the sides of the mountain appeared to have been separated from a raised centre of obsidian, forming, as it were, the spine of the ridge. After exploring the mountain, we crossed it and descended into the plain on the E.

After having again crossed the fields of sand and slag to the S. of Krabla, we came to the foot of the Sulphur

mountain. Here we turned aside to visit the Námar, or boiling mud-pits. The ground which surrounds them is sloughed with burning quagmires and bogs of hot clay. Dismounting, therefore, on the edge of the sandy desert, we proceeded on foot towards the sputtering and steaming cauldrons:—

“ Incedis per ignes
Suppositos cineri doloso.”

The surface of the ground is covered with an ulcerated scabby crust, caked by the heat of the fevered ground beneath, which consists of beds of hot miry clay and sulphur. More than once the foot of one or other of us broke through the crust, leaving, as we withdrew it, a steaming hole in the soft ground, which warned us that we could not pick our way too cautiously.

There are no less than twelve of these boiling cauldrons, all, except two, lying close together. As we approached them, volumes of steam, strongly impregnated with sulphureous gases, were blown into our faces. When we reached their brink and looked down, a sight, as repulsive and horrible as it was strange, met our eyes. At our feet lay a row of mud-pits, sunk in the ground upon which we stood, full of a disgusting, thick, slimy liquid, boiling or simmering with greater or less vehemence. The mire in most of these puddles was of a dark grey slate colour, but in some it was almost black, in others nearly blue. In one, the muddy soup appeared too thick to boil; its surface remained quiescent for about half a minute, and then, after rising up a few inches in the centre of the basin, emitted a puff of steam, and subsided into its former state. The fluid was so viscid that the rings formed by these successive jets remained for several minutes visible above the surface of the pool. Others of the cauldrons sputtered and boiled vehemently, scattering their contents on every side, and covering the edges of their basins with a nasty scum of

slime. Others were contented with squirting, with sudden jets, little bullets of mud in every direction. In the centre of one, a low column of the thick semi-liquid mud rose and subsided with such regularity, that I was strongly reminded of spring opera-hats sometimes exhibited in the windows of London hatters, which continually open and shut by clock-work. The largest of all the pits is one of the two lying apart from the others towards the N. Its diameter cannot be less than fifteen feet, and it is a sort of mud geysir; for at intervals a column of its black liquid contents is thrown up to the height of six or eight feet. These eruptions, which are frequent, are accompanied with a rush of steam, and in the intervals between them the mud is much agitated and boils furiously.

September 1st, Sunday.—In the afternoon we took a stroll up the stream of lava at the back of the farm. We had scarcely left the tûn when we descried a falcon sitting at the top of one of the low hills behind the house, and looking so exactly like one of the grey stones around him, that we were in doubt at first whether he was a bird or not. However, a quick movement of his head, as we approached, cleared up our doubts and sealed his fate. He was sitting in rather an exposed position, and we had to stalk him cautiously and warily. But by separating, and one of us diverting his attention in front, while the other went round and approached him from behind, we managed to get him into our trap, and in ten minutes he had fallen to Shepherd's gun. He proved to be a fine young ger-falcon, in capital plumage. As we proceeded up the stream of lava, it became narrower, and, like a river, flowed down in a well-defined channel in the dip between two ridges, now spreading out and growing more shallow as the channel widened, now becoming deeper and narrower where it was contracted by the hills on either side. Al-

though its surface was generally uneven and irregular, yet in places it was smooth and almost level.

About three miles from Reykja-hlid we reached the base of a fine triangular mountain point, which ends a range of hills that run for a considerable distance towards the N. Olaver, and the guide who brought us from Grim-stadir, had told us that this mountain, which forms a conspicuous object from the shores of the lake, was Leir-hnukr; but the proper Leir-hnukr, so well known for the destruction which its eruptions have caused to the country in its vicinity, is rather an inconsiderable ridge lying somewhat to the E. of this mountain, between it and Krabla. From the height of this mountain, its position on the map, and the absence of any crater upon it, I cannot doubt that it is Hlidar-fjall, which, according to Mr. Gunnlaugsson's measurement, is rather more than 2300 feet high. The day was very fine and clear, and we climbed the mountain in the hopes of obtaining a good view from its summit. The ascent cost us much labour and some little danger, for the sides of the mountain are not only excessively steep, but are covered with the débris of fallen rocks, which lie upon the slopes in large blocks of stone. These, as we stepped upon them, often came sliding down in great masses, to the no small danger of our legs. However, at length we reached the summit in safety. During the ascent we saw a falcon battling with two ravens, like a hawk persecuted by crows, and, as we approached the top, another skimmed along the ridge and disappeared behind a mass of rocks. There was a small cairn at the top, which was evidently a favourite resort of these birds; and as we threw ourselves down to rest beside it, Shepherd remarked how singular it would be if one of them should happen to settle on the cairn whilst we were there. Not five minutes afterwards we heard a sudden rushing sound,

and, starting to our feet, found that a falcon had actually alighted upon the stones just above our heads. I do not know which was most startled by the occurrence, he or us. Shepherd, who alone had brought his gun with him, seized it and fired at the bird, but missed, and the falcon escaped unhurt.

This was at least the third falcon we had seen in our walk. No doubt an ornithologist making his head-quarters at Myvatn might soon add several interesting specimens to his collection. The lake abounds with water fowl, principally eider ducks, but there are also many other species to be found there, and the hills in the neighbourhood are a favourite resort of ptarmigan and golden plover. This morning, as I was on my way to take a dip in the lake, I saw a small hawk just beginning to devour a plover he had killed. I went up and took his prey from him; but he would not be frightened away, and only flew to a haycock near at hand, where he sat eyeing me so anxiously that I relented and gave him back his breakfast. The ptarmigan appear to be attracted to this spot by the abundance of lyng and bláberries growing among the scrub on the hills and in the crevices of the lava, and the falcons no doubt follow the ptarmigan.

The view from Hlidar-fjall was rather more extensive than that from Krabla. On the N. the landscape was crowded with barren hills, beyond which, in the far distance, I fancied that I could make out the blue expanse of the ocean.

To the S. lay the My-vatns Orœfi, the desert plain between Jökulsá Axarfirdi and Myvatn that I have before described, extending southwards into the Odáða Hraun, an immense unexplored tract of lava that has devastated the whole of the country between Herdu-breid and the Vatna Jökull. On the side of this plain beyond the Sulphur

mountains was a very remarkable hollow, basin-shaped hill, called from its shape Hver-fjall (Cauldron-fell). The annexed woodcut is taken from a sketch that I made of it from this spot.



HVER-FJALL.

In the valley close below us, on the E., was the dark lava stream that we had ascended; beyond it rose the brown banks of Leir-hnukr, varied with red and yellow blotches; beyond these again the squat cone of Krabla, and the dark ridge of Hrafn-tinnu-hryggr, backed by the desert My-vatns Orœfi, and the barren hills beyond the Jökulsá Axarfirdi, looking of a lovely blue colour in the distance. To the W. lay My-vatn, so crowded with dark lava islands that there appeared to be almost as much land as water within the circumference of the lake. Beyond it rose a steep mountain range, its top and sides still white with the snow, which had quite disappeared from the valleys. We lingered on the mountain-top until evening began to close in, when we retraced our steps to the farm.

September 2nd.— The northern lights last night, fitfully coming and fading in every part of the heavens, were very beautiful. At one time, an arch of pale yellow light spanned the sky above us; at another, the horizon was lit up by a reddening glare like that of a distant fire. Now a flash, coming with the suddenness of summer lightning, and only lingering as long, flickered for a moment in the W.; now a bright body of light, like a moonlit vapoury cloud, flitted across the sky. It is said in England that an Aurora is the forerunner of bad weather, but we could not well have had a finer day than this turned out to be.

We intended to have left Reykja-hlid to-day, but we stayed one day longer for the purpose of visiting Hver-fjall, the curious hollow hill that we saw yesterday from the top of Hlidar-fjall. It lies about three miles to the S. of Reykja-hlid, between the Sulphur district and the lake, and we went straight to it over the field of lava bordering the lake. The first part of the way was not very bad walking, for amongst the blocks of lava were here and there patches of grass growing on the soil, which had in the course of years collected there. But after about half an hour the character of the lava-field was changed, and it became most disagreeable to walk over. Imagine a field of solid stone turned up by a giant plough, so as to form high ridges and furrows of broken blocks of stone of all shapes and sizes. Such was the ground over which our way led us, and we were not sorry when we at length reached a narrow tract of sand beyond it, on which stood Hver-fjall.

This hill, which is evidently the crater of an extinct volcano, rises only to a height of about two hundred feet above the plain, and consists entirely of sand and blocks of scorizæ, some of which are of great size. Its sides are deeply scored by water courses, and very steep. On reach-

ing the summit, we found ourselves on the edge of an immense circular basin, about two miles in circumference, in the centre of which rose a large circular mound of sand and scorix. A similar hill rises from the plain at a distance of a few miles towards the S.

Sept. 3rd. — We started for Akreyri. The weather still continued very fine, and the days were warm and bright, though the nights were cold with hard frosts, the minimum thermometer in the morning generally standing at from -5° to -6° Cent. (23° to 21.2° Fahr.).

Our road took us round the north end of My-vatn to the banks of the Laxá (Salmon River), which flows from it on the W. The whole of the N. shore has at some time or other been inundated with lava. The greater part of it is now covered with grass, but the numerous fissures and crevasses that gash its surface still show the depths of the stony stream beneath. In many places you can see how the surface of the lava has become hardened, whilst the molten stream underneath still flowed onwards, leaving great caverns beneath the crust, and exemplifying the process which led to the subsidence of the lava field of Thing-vellir.

Having crossed the Laxá, which flows between walls of dark lava, we crossed a broad heidi covered with a low vegetation of heather, lyng-berry, and bláberry, and as well stocked with ptarmigan, as a Norfolk stubble is with partridges. We must have seen several hundred birds in the course of our ride. Our fylgdar-madr had brought his dog with him, and the wretched hound, who pursued everything he saw, was often quite distracted by the number he put up. A ride of about eight hours from Reykja-hlid, brought us to the Skjalfanda-fljot, a broad Jökulsá, which, rising in the Tungna-fells Jökull, flows northwards through the heart of the country. We crossed

it without much difficulty, and in half an hour more reached a little farm on the banks of a lake, called Liosavatn (clear water).

The next day (Sept. 4th), before proceeding to Akreyri, we rode down to the Skjalfanda-fjot to visit Goda-foss, reputed to be the largest waterfall in the country, but I was rather disappointed with it. The dark rocks which frown above the pool, into which the water leaps, are fine; but the fall itself is neither remarkably beautiful nor particularly grand. A ride of less than two hours brought us to Hals, where we paid a passing visit to the priest, and then rode down through a good-sized birch forest to the banks of the Fnjoská. At this river we fell in with a party of excursionists, who had ridden out from Akreyri for the day. We joined them and rode in their company across the steep snow-covered mountains of Vadla-heidi, which separate Fnjoská-dalr from Eya-fjodr. One of the young ladies of the party enlivened our journey, by singing popular English airs, such as "Cheer, Boys, cheer," and "Beautiful Star," with Icelandic words. The Icelanders generally are not musical. I have once or twice heard a man humming a chant, or a mother singing to her child, but, merry and light-hearted as the people are, they do not appear to care much for any kind of music.

After descending from the heidi, we waded a wide river at the head of Eya-fjodr, in which were a number of low islands where the people were making hay. Akreyri lies near the head of the fjord on its western shore. It is little more than a village; the houses, like those of Reykjavik, are mostly tarred or painted black. We had some difficulty in finding any place at which to put up, but at length a merchant agreed to receive us, and we passed two nights very comfortably in his house. We left on September 6th, and rode northwards for about eight miles

along the shore of the Fjodr; then we turned in a S.W. direction up the valley of the Horgá, a rocky stream, which looks as likely for trout as any that I saw in Iceland, and after an easy ride reached Stein-stadir. Here we stopped the night, and were most hospitably treated by the owner of the farm, who had only lately returned from Reykja-vik, whither he had been to fulfil his duties as an Althing-man.

Sept. 7th. — We proceeded up the valley for ten or twelve miles, in the course of which we found much difficulty from the numerous bogs and morasses. On approaching the head of the valley we turned westwards across a mountain-ridge, called Oxnadals-heidi, and from this, entered another valley, and rode along the precipitous banks of a small river, which we had to cross and recross several times, until we reached Blöndu-hlid, a long open valley, running due N and S., as fertile with grass and as thickly studded with farms as any in Iceland. Here we again found a good deal of difficulty from the boggy nature of the ground, and did not reach Mikli-bær until after dark. The following day (Sept 8th), being Sunday, we remained at Mikli-bær. The church here is rather large, and nearly forty persons came in to the service. This was the largest congregation that I saw anywhere out of Reykja-vik. Since everybody, who does not live actually upon the spot, rides to church, however short the distance may be, there was a goodly collection of horses left standing outside the churchyard, whilst service was going on. On such occasions, the Icelanders in order to prevent their horses from straying, tie them together in pairs, head to tail, in such a way that the poor beasts cannot stir, even to nibble the grass at their feet, and it was rather a ludicrous sight to see some fifteen pairs of horses, standing together all bound in this fashion. Se-

veral of the congregation had been indulging rather too freely in corn brandy, before they came to the service; and half a dozen of these fellows hung about the priest's house all the afternoon, making a great noise. At length, one by one, they mounted and rode away, shouting uproariously as they galloped off, and sitting so unsteadily in their saddles, that I expected every minute to see them tumble. This was the only occasion upon which I saw such a drunken scene out of Reykja-vik. There, unfortunately, such disgraceful scenes are too frequent, when the country-people come in to lay in their stores of coffee, sugar, dried fish, wood, &c., in exchange for their wool and knitted things.

Sept. 9th.—The day was ushered in by storms of hail and sleet, and before noon, a heavy fall of snow commenced, which continued without intermission throughout the day. We started about 10 A.M., and after crossing the river at the bottom of the valley, and passing over a tract of boggy ground beyond it, rode for several hours over a mountain tract, till we descended into the valley beyond, upon a farm called Böl-stadar-hlid. The ride was bitterly cold: a N.W. wind met us full in the face, and seemed to drive through everything we had on. The storm prevented us from seeing any distant view. In one place we passed a good-sized lake, upon the shores of which were two or three men making hay, as if a single day during the summer, however wintry it might be, was too valuable to be lost. On the mountain I saw a brood of ptarmigan, crouching down in the snow; their plumage was already nearly white. It has been a question amongst ornithologists, whether there are two or only one species of ptarmigan in this country. As far as my own observation goes, I believe that there is only one, and I am confirmed in this belief by the natives. A ride of about five miles

from Böl-stadar-hlid, took us to Stori-dalr. In our way we had to ford rather a deep river, named Blandá (Mixed river), and to cross a tract full of deep morasses, which caused us much difficulty,

The house at Stori-dalr, was small and very dirty ; but the farmer, a merry little old man, was most hospitable, not only to us, but also to every one about him. As his men, who had been out mowing all day, came dropping in one by one, he gave every one a liberal draught of corn-brandy. But he did not forget himself either, and whilst he gave his men the bottle to drink from, he applied the keg to his own lips.

As usual in Icelandic houses, there was no fire in the guest-room ; we were therefore glad, when the haymakers came home, to warm ourselves at the forge, where they were repairing their scythes for the next day's work.

Sept. 10th.—The morning was fine, and there was not so much snow on the hills as we had expected to find. We started about 9 A.M., and rode up the valley, passing in our way two small farms, on the walls of one of which were hung up a dozen skins of wild swans. The birds had been knocked down by sticks, when moulting. In about an hour we reached the fells, over which our road lay. The surface of the ground here, as in many an Icelandic heidi, is everywhere cut up into little mounds, separated from each other by deep and narrow ruts, and covered with dwarf willows, with long and straggling roots, but low and scrubby branches. We passed several large lakes, on most of which we saw two or three pairs of wild swans. At 3 P.M. we reached a stream with some grass on the banks, and we therefore stopped for an hour to let our horses feed. The desert extended around us as far as we could see, and the dreary aspect was considerably increased by a dull grey autumnal sky. Towards the south a white

glare rising above our horizon marked the position of the Arnar-fells, and Láng Jökulls.

When we started again, a drizzling mist surrounded us, but fortunately it was not very thick, and did not prevent us from seeing our land-marks, or we should probably have lost our way, for there was no track across the desert. More than once travellers on this route have been overtaken by snow-storms and perished, and the bleaching bones, which here and there give a conspicuous whiteness to the *vardar*, or cairns, that at intervals mark the route, point out the spots where horses have met with a similar fate. At 6 P.M. we reached Sand-fell, the highest point of this the highest road in Iceland, which is said to be at an elevation of 2212 feet above the sea. Before this we passed a hill, the whole side of which was crowded with basaltic columns. Beyond Sand-fell we entered the Stori Sandr, an immense stony desert, full of large angular blocks of stone, laid close together on a ground of sand. There was but little snow here. At length we reached a part of the Sandr, where a road for several miles has been made by clearing away the stones from the surface. This was done some years ago at the expense of several of the merchants of Reykja-vik, who were anxious to establish a better communication between that place and Eya-fjodr. But the good work was never carried out, and the amount of labour and expense required to finish it is, I fear, too great to give much chance of its ever being completed. We rode on till 9.30 P.M., when we came to a small stream, which we could only just see glistening through the darkness. After looking about, we found a spot on its banks, covered with grass, where we pitched our tent for the night.

Sept. 11th.—There was but little grass near our camp, and two of our horses during the night wandered away

in search of pasturage. The stream turned out to be the Budará, which flows into the largest of a numerous group of lakes, named Arnar-vötn, not far from our camp, where there was some grass. The rest of the country was a dreary desert. When we found our horses we proceeded in a S.W. direction, past the Eyriks Jökull, a fine mass of dark rock, supported by a number of precipitous buttresses, jutting out from its equally precipitous sides. I counted no less than eighteen of



THE LAVA FIELD OF SURTS-HELLIR.

these. The mountain seems to be an extinct volcano. Its summit is a blunted cone, bisected apparently by an immensely broad fissure, filled with ice. Soon after passing it, we came to an immense field of lava, filling up the whole breadth of the valley between the Arnar-vatns-heidi and the outlying hills of the Eyriks and Láng Jökulls. The fiery stream, which probably originated in the Báld Jökull, has flowed round the Eyriks Jökull, and come surging down the valleys of the Hvítá and Nord-

linga-fljot, its molten waves rising high up against the sides of the neighbouring mountains, and driving the rivers into fresh channels. In many places the lava-field is remarkably level, but in others, its surface swells and falls like a sea of stone; some of the lava domes on it being of great size. It is here that the great Surts-hellir, or caves of Surtur, the prince of darkness and fire, are situated. The accompanying woodcut shows the aspect of the field from near the entrance to the caves, looking S. towards a low mountain called Strútr.* In about an hour after crossing this lava plain we reached Kalmans-tunga.

Sept. 14th.—After breakfast we started with Olaver and the farmer of Kalmans-tunga to explore the Surts-hellir. After retracing our steps of the previous day to the lava-field, and traversing it for some distance, we struck across it towards a *varde* or heap of stones, which marks the principal entrance to the caverns. This is an extensive chasm formed by the falling in of a part of the lava roof of the caverns. Leaving our horses in charge of the farmer, we descended into the chasm, and found ourselves right in the mouth of the caves. The main cavern runs towards Strútr in an almost straight line, and is nearly a mile in length. Its dimensions are somewhat irregular, but its average height is about 40 and its breadth 50 feet, though towards the far end it becomes more contracted. The lava crust, which forms the roof of the caves, is about 12 feet thick, and has the appearance of being stratified, and columnar, like basaltic pillars, in its formation. Many of the blocks of lava thus formed have become detached, and fallen into the cavern, where they lie piled up in great heaps.

We had brought with us some of the candles of our

* For this sketch, as well as those of the entrance to the second portion of Surts-hellir, and the Lång Jökull, I am indebted to the kindness of my friend Capt. Campbell.

cooking lamp, and, each lighting one of these and following Olaver—who had explored the caverns twenty years previously—we entered the dusky passage before us: it was not quite dark, for some way on, the roof had fallen in, and through the aperture a disk of light glimmered in the distance. Immediately after entering, we turned aside out of the main cavern to visit a large chamber on our right. The floor of this is strewn with bones of oxen,



ENTRANCE TO THE SECOND-PORTION OF SURTS-HELLIR.

sheep, and horses, killed (so says tradition) by a band of wild outlaws, who made this their robbers' den, and lived by depredations on their neighbours' flocks, and herds. The country-people still believe in the existence of a race of outlaw robbers, who inhabit the unexplored tracts in the centre of the country. 'How else,' they ask, 'can you account for our losing so many sheep year after year?' From the robbers' cave we reached the main cavern again

by a small side branch, and soon afterwards came to the aperture through which we had seen the light from the entrance. We passed this, keeping on a rampart of lava that runs at the height of ten or twelve feet from the ground along the western wall, and after entering the cave beyond it in a short time reached a second aperture very similar to the first. Leaving this, we were soon in the profound darkness of the cavern, which seemed to make still fainter the faint light of our flickering candles. The walking here would have been bad enough in the light; in the dark it was execrable. We had to scramble over the fallen blocks of lava, slipping and stumbling into the holes between them, varied by pools of water, and masses of snow. After proceeding for some distance, we reached another aperture, at the farther side of which the cave is divided into two by a wall of lava. We first entered the left aperture which is at a lower level than that on the right. At the bottom of it was a pool of water, nearly knee deep, lying on a floor of ice. After passing this we found we had come to the end of the cavern, and were therefore obliged to retrace our steps to the opening. We then entered the other division of the cavern, and here the walking was much better. After some time we came to another opening in the roof. Having passed it and entered the cavern beyond, we found at its bottom a floor of the clearest ice, which was apparently of great thickness, since we could not see the lava beneath it. Olaver had never been into this part of the caves, but there is really no need of a guide to explore them, and so on we went. The walking was delightful over the smooth ice floor, which sloped considerably downwards. In five minutes we reached the most beautiful fairy grotto imaginable. From the crystal floor of ice rose group after group of transparent icy pillars, while from the glittering roof, most brilliant icy pen-

dants hung down to meet them. Columns and arches of ice were ranged along the crystalline walls; the lights of our candles were reflected back a hundredfold from every side till the whole cavern shone with wondrous lustre. I never saw a more brilliant scene; and indeed it would be difficult to imagine any thing more fairy like. The pillars, which stood

“Like natural sculpture in cathedral cavern,”

were many of them of great size tapering to a point as they rose. The largest were at least eight feet high, and six feet in circumference at their base. The stalactites were on an equally grand scale. Through this lovely ice grotto we walked for nearly ten minutes. After leaving it, in five minutes we reached the foot of a steep bank, upon the top of which we discovered the cairn built by Olafsen and Povelsen in 1753. We found here, amongst numerous other coins, the Danish half-crown (dated 1688) which they deposited, and could still decipher the seal upon it, which represents two dogs fighting with some animal (a hedgehog according to Henderson).

After repairing the cairn, we left upon it three English coins, as a memorial of our visit, and again proceeded. We reached the end of the cavern, after a few minutes' easy walk over a level floor of vitreous lava, covered with small black glassy projections, that glittered brightly in the light of our candles. We then returned to the nearest aperture, and after scrambling up the sides of the tunnel to the upper air, mounted our horses and galloped back to Kalmans-tunga.*

Sept. 13th.—The next day we proceeded to Reyk-holt

* The temperature of the caves was from 8° to 10° C. (46° to 50° Fahrenheit), that of the air outside being 12° C. (53° Fahrenheit).



LANG JÖKVULL.

(Smoke Hill), where we stopped the two following days, visiting the numerous hot springs in the neighbourhood. Many of them are very quaint. One of the largest groups has, by a continual process of incrustation, raised for itself a small island in the middle of the glacial waters of the Hvítá: and numerous others around the island come spitting up through the icy water from the bottom of the river. For a fuller description of them I must refer my readers to the accounts of Sir G. Mackenzie, Henderson, and other travellers.

Sept. 16th.—We left Reyk-holt and crossed the fjall to Thingvallas-veit. Our road was S., across the Valley of Reyk-holt, and up the mountains on the far side of it across a desolate flat plain at their top. After some time we came into view of the circular insulated Ok Jökull. Its top was shrouded in mist, and it looked low and insignificant; next we saw the ice fields of Geit-lands Jökull, as the most westerly part of the great Láng Jökull is called. Further on were several small lakes not yet deserted for the sea-shore by their wild swans, and then we passed Skjaldbreid, a volcano well known in the annals of Iceland, which has devastated a vast tract of country to the S. We rode for several miles along the side of an extensive plain of lava, which has flowed from this mountain, and after traversing a tract of volcanic sand, ascended a steep mountain from the top of which we saw the valley of Thingvellir extended at our feet. Descending into the head of the valley, we rode across it towards the lake; but since the day was drawing in, and our ride had been a long one, we stopped short of Thingvellir at Hraun-tún (Lava-tún), a little farm lying in the midst of the lava, and completely hidden by it until you approach almost to the tún wall.

The following morning (*Sept. 17th*) an hour's ride brought us to our old quarters at Thingvellir, where we

stopped that night, and the next day proceeded to Reykjavik. We had been informed before starting on our tour that the Arcturus would arrive on her return voyage about this time, and we stopped four days at Reykjavik daily expecting her. We found, however, plenty to do there. Two days we spent at the interesting fossil-beds of Fossvogr, which are only a short distance off. A third, I took my rod to the Laxá, and though the river was low, and the season late, caught one salmon and half a dozen very good sea-trout. On Monday, Sept. 23rd, there being no signs of the Arcturus, we set out for a short tour of six days, to Krisuvik (the Sulphur Mountain of the S.), Eyrarbakki, and Reykir, (the little Geysir). On our return we found that the Arcturus had at last arrived. But a tremendous storm, which lasted four days, detained her from sailing, and it was not until the morning of Oct. 3rd that we weighed anchor and steamed down the Faxa-fjördr in a S.W. gale, which lasted us the whole way, until we again placed foot on *terra firma* in Scotland.

APPENDIX.

THE only regular communication between this country and Iceland, is by the *Arcturus* steamer. The agents for which, are Messrs. D. Robertson and Co. at Grangemouth; and Messrs. Kock and Henderson at Copenhagen.

The fare is 5*l.* each way, or 9*l.* for a return ticket, available for the same voyage only, and giving about a week in the island. The tariff on board is reasonable. The currency of Iceland is Danish silver: Danish notes are useless: but English notes and English gold, can always be exchanged for Danish money at Reykja-vik.

There are no roads, and therefore no carriages in Iceland, and consequently the only way of travelling is on horseback. The distances between the places are too great, the rivers are too furious, and the bogs too extensive, to allow of a walking tour being made. Horses should always, if possible, be procured beforehand. Probably the steamboat agent at Reykja-vik would undertake to get any number that might be required. Their price is from about 2*l.* to 4*l.* We paid for ours from 16 dollars (1*l.* 16*s.*) to 33 dollars (3*l.* 14*s.* 3*d.*) each. Riding-horses cost a little more than baggage-horses. If the traveller prefer it, he can hire horses for his tour at the rate of about three marks a day for a riding-horse, and two for a baggage-horse. The value of a mark is fourpence-halfpenny. The horses can be sold again after the journey, and generally fetch between one third and one fourth of their original price. From these data, the traveller can judge for himself whether to buy or hire the required number of horses. Buying has some advantages, as for instance, the being able to make a swop in case of a horse being lamed. I should recommend travellers who intend to take a long journey, to buy; those who are going for only a fortnight or so, to hire. Those who merely wish to visit Hekla, the Geysirs, and Krisuvik, could probably make a bargain for the price of horses for their

journey, irrespective of the time occupied by it, at a somewhat cheaper rate than if they took them by the day.

One great difficulty of an Icelandic traveller is with regard to guides. As I have mentioned, most of the so-called Reykja-vik guides know no more about the greater part of the country than the traveller who sees it for the first time. The best plan would be to arrange with a student at the Reykja-vik college to accompany you, and to hire a fylgdar-madr, or local guide, from place to place. There are now, however, two or three men at Reykja-vik, who have accompanied recent travellers through a great part of the country ; amongst them I may mention our guide, Olaver, whom I can strongly recommend ; and Zoega, the only one of them who speaks English. The charge for guides is from one and half dollar (3*s.* 4½*d.*) to three dollars (6*s.* 9*d.*) a day, including everything but their horses. With regard to outfit, persons differ so much in their ideas of what is necessary for a traveller, that it is somewhat difficult to speak for every one. I should recommend a strong tweed suit as best for the climate, and the work. I myself always rode in a pea-jacket, taking it off, and, like the natives, riding in my shirt sleeves when the weather was warm. Good warm gloves and stockings should be taken from England. We had heard much of the goodness of Icelandic gloves and socks, and had reckoned on being able to obtain them in the country. To our cost we found that they had all been exported to Denmark, and it was not until we had tried at many farms, that we could obtain even a single pair of gloves. The storms of Iceland are often very furious, and every Icelandic traveller should therefore be prepared with a complete covering of waterproofs. He should also provide himself with a pair of long fisherman's boots, to draw up over the thigh, for crossing the rivers in, or, as a substitute, fishing stockings, covered down the leg with leather, like an hussar's trowsers. I should also recommend that both a saddle and a snaffle-bridle should be taken from England. The former should fit a pony of about thirteen hands. There is a saddler at Reykja-vik, who will stuff it if it is a little too large.

At least a dozen of the strongest girths of all sizes should likewise be taken ; and a small hunting crop, or dog whip, with a long thong would also be useful. Nails, horseshoes, hobbles and such like necessaries can be secured at Reykja-vik. In the way of supplies, I should advise the traveller to take nothing but a few pounds of sea-biscuits, some brandy, and tobacco. Coffee, milk,

butter, cheese, káku or black rye-bread, dried fish, and corn brandy, can be obtained at nearly every farm. Rice too is often obtainable, and in most parts of the country fresh fish, and not unfrequently mutton. The charge for all these things is extremely moderate. On an average we paid only from one and a half (8s. 4½d.) to two dollars (4s. 6d.) a day for supplies for our two selves and Olaver, as well as for grass for our horses. In several places our hosts refused to take anything at all. In such cases we found such presents as knives, pencil-cases, and little things of that sort very useful. Books would be much esteemed, but their weight and bulk make them difficult to carry. Pictures or photographs would I think be prized, and scissors, needles, knives, &c., are always acceptable. Where we had to pay, we used to do so through Olaver.

If the traveller intends making a journey through the interior, a tent is necessary; but it should not weigh more than about sixty pounds, or half a horse's load; on a short journey he will find it most convenient to take up his quarters in the farm-houses or the churches, and to travel without any baggage at all, except a blanket for sleeping in. We followed this plan in the six days' tour that we took by Krisuvik, Eyrar-bakki, and Reykir, and found it answer very well.

For a tour across the interior, it will be necessary to take a cooking-lamp; a spirit-lamp is the best. If you take gun or fishing-rod, you must either carry them yourself, or have a strong case made for them. I carried my gun all round the island in a shoe, made on the same principle as a lancer's lance-rest, and fastened to my stirrup. This answered its purpose admirably.

Instead of the Icelandic boxes, which are very cumbersome and weighty, it would be as well to have some smaller boxes made in England. They must be constructed so as to be thoroughly water-proof, but care must be taken that they are very strong, as they are sure to come into frequent collision with the boxes carried by the other horses, or to be bumped against masses of stone and sharp points of lava. They must have iron rings fastened to the backs in order to go over the hooks on the bearers; but these will be best fitted on at Reykja-vik. An Icelandic box is usually about fifteen inches high, twenty-two inches long, and about ten inches wide, the wood of which it is made being about three-fourths of an inch thick. Saddle-bags will be found very useful to carry clothes and lighter articles. A

pad for these should be taken from England. No Icelandic traveller should be without Gunnlaugsson's (Olsen's) map, or omit to read Henderson before he sets out.

The best time for travelling in Iceland is from the middle of June till the middle of September. In June the horses are getting fat and strong, and the effects of the scantiness of their food during the winter has passed away. The days, too, are then longest; indeed, there is scarcely any night at all, and the rivers are generally in good order for fishing. Towards the end of September the days become too short for a long journey.

There is still room for exploration in Iceland. The N.W. peninsula is almost unknown. Even Henderson went but a very short way into it, and no one, I believe, has since attempted to explore it. The interior ice-fields of the great Vatna Jökull have never yet been trodden by foot of man, but it is to be hoped that they will not long remain so. A visit to the Skaptár Jökull would be especially interesting. The difficulty of exploring this district arises from the absence of pasturage in the deserts near at hand. But probably an attempt to explore the W. end of the Vatna Jökull might be made successfully, even without a regularly organised expedition, by way of Fiski-vötn, where I am informed there is plenty of grass. It has been recommended that a party going out to explore the Vatna Jökull should make Beru-fjörðr their starting point, but I think that this is a mistake. I believe that the best point of attack would be from the W., and not from the E. or S. Added to which, it would be very difficult, if not impossible, to procure the necessary number of horses in that part of the island. They would have to be taken thither from the N. or W., which would be attended with considerable expense. There are many Jökulls which it would be well worth while to ascend. So far as I am aware no one has ever yet reached the actual summit of any Jökull. The Snæ-fells Jökull has been several times attempted, but never with complete success. Of all those that I saw Snæ-fell in the E., and Hvanna-dals-nukr on the Oræfa-Jökull appeared to be most worthy of an ascent. The traveller must not expect to find in Iceland any mountaineers who are acquainted with their Jökulla, and can act as guides, but he will in most cases be able, for a trifling sum, to obtain the services of some peasant, who will be willing to accompany him on any mountain expedition.

Finally, I would say, that not only the member of the

Alpine Club, but the geologist, the botanist, and the ornithologist, will, each in his own line, find much to interest him in Iceland. The lover of fine scenery will find there a wild, weird country, abounding with rugged cliffs, rushing torrents, noble mountains, and leaping waterfalls, but having also its softer scenes, its blue fjordra, its grassy valleys, its flowering banks, and its quiet homesteads; and every one who goes there will meet with such open, warm-hearted hospitality as it would be difficult to find equalled in any other country.

EDWARD THURSTAN HOLLAND.

NOTE 1.

The following letter was written by Mr. Hogarth to Mr. W. Longman, and appeared in the *Times* towards the end of last June (1861).

“Eyrebaki (Eyrarbacki), June 13th.

“Dear Sir,—I drop you a few lines to acquaint you with an interesting circumstance, which has taken place here within a few days, but, unfortunately before our arrival, although we did fall in with a part of it before reaching the coast; which was, meeting a large body of fresh very brown water, about eighty miles off Ingolfo Head [Ingolfs-hofdi], on the morning of Monday last, the 10th instant, the temperature of which was 46°, two degrees lower than the previous day. We continued to sail through this stream of fresh water for about thirty miles, when we sighted the high land of the Orœfa Jökull, and came into green water, which we carried with us into the shore, a distance of fifty miles, when we met the ordinary mild water of the snow-streams of the land.

“On mentioning this circumstance on our arrival here, we were informed that the Orœfa and Scepta [Skaptár] Jökulls had both been in a state of eruption a few days back, the particulars of which we have been made acquainted with by the minister of that neighbourhood, who was present and witnessed it, and the account which he gives is as follows:—On the 23rd of May the first signs of eruption were observed by an unusual flow of water from the Orœfa, and on the morning of the 24th they were awakened by a strong smell of sulphur, which became overpower-

ing, and which was quite apparent at Reyk-javik, a distance of 200 miles; at the same time all metals, except iron, had become tarnished, although in many instances carefully wrapped up in cotton. It appears to have affected these metals at a distance of fifty miles from the mountain. The Rev. Mr. Pollson, our informant, states that this is the first real volcanic eruption which has occurred in the Orœfa Jökull, although the rivers Skeidava [Skeidará] and Neeþo [Djupá (?)], flowing from the Skapta, have been regularly flooded every sixth year, the latter invariably following the former after the lapse of twenty-four hours, on all of which occasions large masses of ice are brought down from the mountain, and remain in the low country for years before they disappear. On this occasion an interval of ten years has elapsed since the last regular flooding of these rivers took place, and the quantity of water sent down by the present eruption completely inundated the flat land between those two rivers, a distance of twenty miles. Smoke in great quantities has been ejected on this occasion from both these mountains, a circumstance not before known. Mr. Pollson was called from home three days after the eruption commenced, when it was as vigorous as ever, but has heard since that it has subsided, which we can corroborate, as we sailed close along the land on Tuesday morning last, and had a fine view of the whole mountain range; but the absence of any unusual quantity of fresh water on the ocean near the land, while it abounded at eighty miles off, proved the thing.

"The quantity of débris from the Orœfa appears to have been very great, as the coast here, a distance of 150 miles from the mountain, is covered with pumice stone and brushwood. I have taken the liberty of communicating these circumstances to you, knowing the deep interest which you take in these matters, and regret that as we (Major Wyatt, C.B. and self) are on the eve of starting for our fishing lodge in Thingvalla valley, we are unable to collect any further particulars. I may mention that we had a pleasant passage out from Aberdeen by a sailing vessel in eight days, and have only further to say that I have seen a very beautiful specimen of Surturbrand upwards of a foot through, and as hard and black as a coal, and that you may make any use of this letter you may think proper for the benefit of those whom you think it might interest; and I remain, dear Sir, yours sincerely,

"WILLIAM HOGARTH.

"William Longman, Esq.,
36 Hyde Park Square, London."

NOTE 2.

The annexed account of Mr. Paulson's ascent of the Örœfa Jökull is taken from a note in Henderson's *Iceland* (p. 203).

"We left Qviskér (a small solitary farm at the eastern base of the mountain) at 5.45 in the morning of the 11th of August 1794, with a clear atmosphere and calm weather, after having furnished ourselves with a barometer, a thermometer, a small compass, a pointed hammer, a long pole, and a rope about ten fathoms in length. Our route lay up the precipitous mountains which form the base of the Yökul, till we gained the ice at 8.45 A.M., when we rested a few minutes on a small height, at the base of which we observed several specimens of the beautiful Alpine plant, *Ranunculus nivalis*, some of which had already withered. Such as had recently blossomed had snow-white petals, but those of longer standing were more or less red, resembling a saffron yellow. This plant is very rarely to be met with on the Southern Alps of Iceland.

"The barometer had now fallen from $28^{\circ} 4\frac{1}{2}'$, where it stood at Qviskér, to $25^{\circ} 4\frac{1}{2}'$, and the heat was $8\frac{1}{2}'$ of Reaumur.

"The margin of the Yökul had evidently pushed forward against the height on which we stood, and raised a wall of small stones and sand nearly half up its side, but had again retreated to the distance of several fathoms.

"Having bound myself to my two companions by means of the rope, leaving a distance of two fathoms between each, that we might assist each other in case any of us should happen to fall into a rent of the ice, we proceeded up the Yökul, but had scarcely advanced twenty paces, when we heard a noise louder than thunder, running as it were longitudinally through the whole ice mountain from S. to N., accompanied with a perceptible concussion under our feet, which lasted for about a minute.

"My companions now wished to return, but though this shock retarded our progress for a few moments, a kind of natural impulse to visit these icy Alps prompted me to continue my ascent; and we afterwards found that the report was occasioned by what is called Yökla-brestr, or Yökul-burst, the ice having disrupted and fallen in from either side of a gully, about a mile (five English miles) in length.

"We continued our route up the S.E. side of the Yökul, where it

was least acclivitous, passing a number of black tuffa rocks, and crossing a multiplicity of fissures deeper than the eye could reach. Here, as is common at such elevations, the atmosphere got too thin to admit of our breathing with freedom. One of our party was so much affected, and felt such an inclination to sleep, that he remained behind us, and on lying down on the bare ice, immediately fell asleep; the other, naturally subject to a beating at the heart and melancholy, found himself more relieved and cheerful the higher we ascended, without being sensible of any particular fatigue from the tenuity of the air. We at length gained the S.E. peak of the Yökul at 11.45 A.M., and found, that, in conjunction with the three or four other peaks to the W. and N., it describes the side of an immensely large crater of a circular form. These peaks on the summit of the Yökul are so precipitous, that the mass of ice has in different places disengaged itself, and fallen down from them, leaving a number of black calcined rocks, the tops of which are covered with hats of frozen snow, and for the most part inaccessible, as a single false step would inevitably precipitate the traveller into the unfathomable chasms at their base. The barometer fell here to $22^{\circ} 6''$, or $5^{\circ} 10\frac{1}{4}''$, from what it was at Qviskér. The thermometer, at the same height with our eye from the surface of the Yökul, stood at $11\frac{1}{4}^{\circ}$ of Reaumur. The atmosphere was clear, and the wind blew keenly from the N. We could not discover any irregularity of the compass, and the whole of its variation was two points towards the W.

"The prospect was naturally enchanting. We had a view of all the Yökuls and mountains towards the N.E., between the spot on which we stood and Hornafjord, and the situation of Máfabyg-dir, a little to the N.W. of Breida-mark mountain, from which two chains of sandy and stony mountains project towards the S.E., to the spot where the river breaks forth from the foundation of the Yökul. Towards the W., the Eyafialla Yökul rose majestically before us, and in a northerly direction we could descry the summit of Sniáfjall, but were prevented from seeing the regions in the interior by the peaks of the Yökul intercepting our view.

"We again reached Qviskér, much fatigued, about 4.30 in the afternoon."

NOTE 3.

The following is a list of plants which I collected during my tour. For their classification and names I am indebted to the kindness of Mr. Babington. I have added the names of the places where I gathered the different specimens, but because the name of a single place, or of one or two places only are placed opposite the name of a plant, it does not at all follow that the plant is not to be found in many other places. I may add that I know nothing about botany, but was induced to make this collection at the request of a friend.

Ranunculaceæ.

Thalictrum alpinum, Linn. Akreyri.

Ranunculus acris, Linn. Between Reyni-vellir and Holtar.

Papaveraceæ.

Papaver nudicaule, Linn. Jökul-dalr near Stafa-fell.

Cruciferaæ.

Arabis petraea, Linn. Geysirs.

Cardamine pratensis, Linn. Raud-nef-stadr, Reykja-vik, Volasel.

Draba incana, Linn. Mödru-dalr.

Capsella Bursa-pastoris, Linn. Mödru-dalr.

Cakile maritima, Scop. Reykja-vik.

Violaceæ.

Viola tricolor, Linn. Akreyri.

Caryophyllaceæ.

Silene maritima, With. On sand by the river near Valthjof-stadir. Hof near Torfa Jökull.

Silene acaulis, Linn. Raud-nef-stadr, under Oræfa Jökull, near My-vatn.

Lychnis alpina, Linn. Arnar-vatns-heidi, Surts-hellir.

Spergula arvensis, Linn. Reykja-vik.

Arenaria norvegica, Gunn. Breid-dals-heidi.

Cerastium alpinum, Linn. Akreyri, Geysirs, Raud-nef-stadr, Reykja-hlid, Kalmans-tunga.

Geraniaceæ.

Geranium sylvaticum, Linn. Near Beru-fjodr, between Grim-stadir, and My-vatn.

Leguminosæ.

Vicia Cracca, Linn. Raud-nef-stadr.

Trifolium repens, Linn. Heina-berg.

Rosaceæ.

- Spiræa Ulmaria*, *Linn.* Between Reyni-vellir and Holtar.
Dryas octopetala, *Linn.* Hallorm-stadr-hals, Geysirs.
Potentilla Comarum, *Nesl.* Reyk-holt, Akreyri, Selsund.
Potentilla alpestris, *Hall.* Breid-dals-heidi.
Geum rivale, *Linn.* Hvítá, Skaptár-tunga.
Alchemilla vulgaris, *Linn.* Akreyri, Raud-nef-stadr.
Alchemilla alpina, *Linn.* Geysirs, between Reyni-vellir and Holtar, near Stafa-fell, Mikli-ber.

Onagraceæ.

- Epilobium latifolium*, *Linn.* Sandy river-bed, S. E. of Torfa Jökull, under Örefa, Skeidarár Sandr.

Crassulaceæ.

- Sedum Rhodiola*, *D.C.* Alfta-fjördr.
Sedum villosum, *Linn.* Breid-dals-heidi, Akreyri, S. of Ok Jökull.

Saxifragaceæ.

- Saxifraga aizoides*, *Linn.* Jökul-dalr, near Stafa-fell, Breid-dals-heidi.
Saxifraga Hirculus, *Linn.* Breid-dals-heidi, Jökul-dalr, Stafa-fell, Hvítá, Eld-vatn.
Saxifraga cæspitosa, *Linn.* Selsund, Breid-dals-heidi.
Saxifraga hypnoides, *Linn.* Raud-nef-stadr.
Saxifraga stellaris, *Linn.* Sandy river-bed, S. of Torfa Jökull.
Parnassia palustris, *Linn.* Geysirs, between Reyni-vellir and Holtar.

Umbelliferaæ.

- Angelica sylvestris*, *Linn.* Beru-fjördr.

Rubiaceæ.

- Galium boreale*, *Linn.* Selsund.
Galium pusillum, *Linn.* Raud-nef-stadr, Kalmans-tunga.
Galium verum, *Linn.* Selsund, Jökul-dalr, near Stafa-fell.

Compositæ.

- Erigeron alpinus*, *Linn.* Geysirs, Breid-dals-heidi.
Gnaphalium norvegicum, *Gunn.* Breid-dals-heidi.
Matricaria inodora, *Linn.* Mikli-ber.
Achillea Millefolium, *Linn.* Valthjof-stadr, Modru-dalr, Akreyri.
Apargia autumnalis, *Willd.* Beru-fjördr.

Campanulaceæ.

- Campanula rotundifolia*, *Linn.* Beru-fjördr.

Ericaceæ.

- Calluna vulgaris*, *Linn.* Örefa Jökull, Grim-stadir.
Vaccinium uliginosum, *Linn.* Breid-dals-heidi.

Gentianaceæ.

- Gentiana Amarella*, Linn. Selsund, Stein-holt, Hraun.
Gentiana campestris, Linn. Selsund, Beru-fjodr.
Gentiana nivalis, Linn. Stein-holt, Leir-hnukr.
Pleurogyne rotata, Griseb. Mödru-dalr, Arnar-vatns-heidi.

Boraginaceæ.

- Myosotis arvensis*, Linn. Raud-nef-stadr, Akreyri.
Myosotis collina, Hoffm. Beru-fjodr.

Scrophulariaceæ.

- Rhinanthus Crista-galli*, Linn. Raud-nef-stadr, Knappa-vellir.
Euphrasia officinalis, Linn. Upsalir, Breid-dals-heidi.
Veronica alpina, Linn. Breid-dals-heidi, Hallorm-stadr-hala.

Labiataæ.

- Thymus Serpyllum*, Linn. Breid-dals-heidi, Mikli-bær.

Lentibulariaceæ.

- Pinguicula vulgaris*, Linn. Selsund, Stein-holt, Raud-nef-stadr, Knappa-vellir.

Plumbaginaceæ.

- Armeria maritima*, Willd. Reyk-holt, under Örefa Jökull.

Polygonaceæ.

- Polygonum viviparum*, Linn. Akreyri, Hallorm-stadr-hala, under Örefa Jökull, near My-vatn.
Rumex acetosa, Linn. Breid-dals-heidi.
Oxyria reniformis, Hook. Breid-dals-heidi.

Empetraceæ.

- Empetrum nigrum*, Linn. Örefa Jökull, near My-vatn.

Amentiferaæ.

- Salix lanata*, Linn. Heidi.
Salix herbacea, Linn. Breid-dals-heidi.

Coniferaæ.

- Juniperus nana*, Willd. W. of Skjald-breid, My-vatns Öreft.

Orchidaceæ.

- Habenaria hyperborea*, R. Br. Geysirs, Selsund, Buland, Prest-bakki, Stein-holt, between Reyni-vellir, and Holtar.

Melanthaceæ.

- Tofieldia palustris*, Huds. Akreyri, Breid-dals-heidi.

Juncaceæ.

Juncus balticus, Willd. Upsalir.

Cyperaceæ.

Eriophorum angustifolium, Linn. Upsalir, Grim-stadir.

Carex rigida, Linn. Breid-dals-heidi.

Gramineæ.

Elymus arenarius, Linn. On sand-hills, in the desert below Hekla, between Stori-vellir and Hekla, Modru-dalr, Grim-stadir.

Equisetaceæ.

Equisetum umbrosum, Willd. Skjald-breid.

Filices.

Woodsia ilvensis, R. Br. Selsund.

Cystopteris fragilis, Bernh. Mikli-bær, Selsund, Surts-hellir.

Lycopodiaceæ.

Lycopodium Selago, Linn. Surts-hellir.

Lycopodium selaginoides, Linn. Örefa Jökull.

"This is a very interesting set of plants, chiefly because it was formed in parts of Iceland from whence we have not previously received any collection. With the exception of a small packet formed near Akreyri, on the north coast, by Mr. Isaac Carroll, of Cork, in the course of the summer of 1861, all our previous knowledge of the plants of Iceland was derived from an examination of the south-western part of the island. As might be expected to be the case in a collection made by a traveller who did not make botany the primary object of his tour, it is wanting in some respects. But few of the less conspicuous plants are contained in it. It is especially deficient in the orders *Compositæ*, *Ericaceæ*, *Amentifera*, *Orchidaceæ*, *Juncaceæ*, *Cyperaceæ*, *Gramineæ*, and *Filices*. There is no addition made by it to the known flora of Iceland. I hope, as soon as other engagements will allow, to draw up a more scientific account of this and Mr. Carroll's collections, in conjunction with a review of the list of plants gathered by myself in Iceland in 1846.

"(Signed) CHARLES C. BABINGTON.

"March 18, 1862."

CHAPTER II.

THE OBER-ENGADIN.



1. PONTRESINA TO CHIESA, IN THE VAL MALENCA;
PASS OF THE ROSEGG GLACIER AND COL DI
SCERSEN; TOUR OF THE BERNINA.
2. ASCENT OF THE PIZZO BERNINA.

1. PONTRESINA TO CHIESA, IN THE VAL MALENCA;
PASS OF THE ROSEGG GLACIER AND COL DI SCERSEN;
TOUR OF THE BERNINA.

BY ARTHUR MILMAN, M.A.

THE chain of the Bernina has as yet been so imperfectly explored, that the following short account of an excursion, made by myself and brother in the autumn of last year, may not be altogether unacceptable as a guide to future Alpine travellers. It will do little more than indicate a new route. We made no scientific observations, buried no thermometers, and did not carry off one single geological or botanical specimen.

We arrived at Pontresina on the morning of the 6th of September, 1861, and spent the remainder of the day lounging in the fir woods and discussing our future plans. The books afford so little information and advice about the district, that we were in much doubt as to the way in which a few days might be spent to best advantage. Hearing, however, that a new pass had been discovered some days previously by two English gentlemen, we proceeded to make inquiry, and found that Messrs. Wedgewood and Grove had crossed by the head of the Rosegg, Fex, and Scersen glaciers to Chiesa, an Italian village situated in the Val Malenca, on the southern side of the main chain of the Alps. Some brief notes of the expedition, which, together with the names of their guides, they had entered in the travellers' book at the hotel, spoke so

highly of the interest and grandeur of the pass, that we at once determined to follow in their footsteps.

We sent for Alexander Fleuri, one of the guides that had accompanied the former party. He soon came in, a tall and active-looking man in the prime of life. After a few words our arrangements were quickly made. He was to look out for another guide or porter, and we determined to start the next evening and sleep at a *châlet* at the foot of the Rosegg glacier, so as to shorten by two or three hours a long day's work, and start fresh in the cool air of the early morning on the ascent of the glacier.

The next day we ascended Piz Languard. Soon after leaving the village, threatening clouds began to collect, and, wreathing themselves in fantastic shapes round the Piz Bernina, settled low and heavily down in the hollows of the Rosegg and Morteratsch glaciers. A heavy bank of clouds stretched gloomily over the northern horizon, whence it slowly but steadily advanced southwards. We hurried up as fast as possible, in order to attain the summit before the distant view became entirely obliterated.

We passed numerous parties, all striving to the same end, bent on the same errand as ourselves.

The weather this year had been so continuously fine, that no one had a foreboding of change, or could be persuaded to take a desponding view of present appearances. In perfect confidence, cloaks and umbrellas had all been left quietly reposing at the bottom of the valley; and it must be added that, in spite of dark clouds and occasional passing showers, the confidence was again for this day most happily not misplaced. It is needless to dilate upon the magnificent panorama of mountains that is seen from Piz Languard. Though its fame is comparatively recent, and is celebrated only in the latest editions of the guide-books, it already attracts a crowd of tourists, and will

doubtless ere long rival or outrival the Righi, Faulhorn, or even the *Æggisch-horn*.

The distant glories of the mountains were, indeed, on this day partially obscured; but the masses of driving clouds and curling vapour so constantly shifted their position and direction, that I believe, except towards the north-western points, we saw in succession all the chief features of the view, while the cloud-capped distant pinnacles gained perhaps in grandeur and sublimity even more than they lost in distinctness.

On returning from Piz Languard we summoned Fleuri. He told us that he had found a companion, one Florian Jenni, a brother of Peter Jenni, well known at Pontresina; but he shook his head over the barometer, and strongly recommended us to postpone our departure for a day or two, in order to give the weather time to arrange itself. This we absolutely refused to do; and setting out at about 4.30 in the afternoon, we strolled up the Val Rosegg to the *châlet* where we were to pass the night. It is a delightful walk, of little more than two hours' easy going,—through woods and meadows, by the margin of a loud rushing torrent, and by springs of clearest water welling copiously from the ground.

The inclination of the valley is so slight as to be scarcely perceptible; and the view of the glacier in the distance, rising, as it seems, at the end of an almost level line, is one of the peculiar and most characteristic features of the scene.

The *châlet*, situated on a green pasture amid many streams, and encircled by the usual narrow margin or belt of mud, did not at first sight look very attractive; but appearances were deceitful. We were received with much quiet civility by the inhabitants, and found the interior a model of cleanliness. A pile of blazing wood threw a

ruddy light over beams and rafters, and, crackling a pleasant welcome, offered hospitable refuge from the chilly evening air. After a supper of chocolate and bread with freshest butter, we drew round the fire, and kept up a limited conversation with the shepherds. A young chamois-hunter was of the party. He had been out on the mountains for several days, but had brought nothing home. He spoke, however, of large herds of chamois that he had seen,—so large, indeed, as occasionally to seem almost incredible, and induce a belief that the rugged German and French, with now and then a slight infusion of Romanche and Italian *patois*, in which our communication was carried on, was perhaps a doubtful instrument for the attainment of accurate information. Then, on a luxurious bed of hay, sweet, soft, and dry, we sought and found such sleep and rest as mountain air and exercise only can impart.

We were up and stirring at about 3.30 the next morning. Our guides began to boil chocolate for breakfast. I sallied forth for a moment to have a look at the weather, but soon returned shivering to the fire. A cold white mist brooded over everything. Fleuri said oracularly that the day might be wet or it might be fine—at any rate we could start and see. Thenceforth I regarded his prophecies with stern incredulity.

We were off by 4.15, and made straight for the glacier, on to which we climbed by the steep sides of the terminal moraine. The white mist gradually but swiftly dissolved, disclosing peak after peak, here rising, there dropping, like a veil from the face of the clear blue sky. We had a splendid day before us. "I said it would be fine or wet," said Fleuri, self-approvingly, "and you see it is fine; so I was right, sir." Before tracing our route over the glacier, it may perhaps be as well to say a few words

upon the general configuration and topography of this region.

In the chain of the Rhaetian Alps that extends from the sources of the Hinter-Rhein, on the W., to the Stelvio and Ortler in the Tyrol, on the E., there is no more magnificent group of mountains than that which, from the name of its loftiest peak, is called the Bernina. This group lies between the upper valleys of the Inn and Adda; while on its north-eastern and south-western sides it is bounded respectively by the pass of the Bernina and the Val Malenca, from the head of which you can cross by the Muretto and descend upon the Silser See and the sources of the Inn. Besides innumerable smaller tributaries, six main ice-streams flow down from its rugged sides,—on the N., the Morteratsch, Rosegg, and Fex glaciers; on the S., the Palü, Fellaria, and Scersen. There does not seem to be any direct passage from the Rosegg to the Scersen glacier. A precipitous wall of rock presents an insurmountable obstacle between them. To cross, therefore, from the crest of the Rosegg into the Val Malenca, it is necessary first to descend upon the Fex glacier, whence the head of the Scersen and Val Malenca is easily attainable by a direct though fatiguing route. This was the route that I am now about to describe.

We struck the centre of the glacier, and continued to ascend for about an hour without check or hindrance. Then the glacier became much crevassed, and we had with constant winding to pick a devious course upwards. We kept tending to our right, and at about 6.30 got off the ice on to some rocks situated by the side of, and just under, the great ice-fall. I doubted a little whether we might not have arrived at the same point rather sooner by following a faintly marked track on the shoulder of the mountain that borders the western side

of the glacier, instead of searching our way among the crevasses, but do not feel confident on the subject. We halted for a few minutes in a sheltered nook before continuing our upward movement. After a short climb over the rocks we returned to the ice, and mounted by steep snow-slides, with here and there a rocky islet, that afforded a momentary resting-place, to the upper *névé*. Upon this we emerged, passing close under "*il Capütschin*," a dark and jagged buttress, and circumventing two or three enormous transverse crevasses that here split the glacier. I may mention that these rocky islets, that crop out through the ice at this steepest part of the fall, are the same which are seen from Pontresina, and may, by an effort of imagination, be so arranged as to assume an absurd resemblance to a human face, or, more nearly, a skeleton's skull.

On the upper fields we found the snow firm and in excellent condition. We trudged steadily on,—Piz Rosegg, a grand object, immediately on our left,—and before 9 o'clock attained the summit of the glacier, and the deep gap in the mountain chain that forms its ice-shed. We were perfectly electrified by the sublimity and magnificence of the view which here burst upon us. Immediately beneath us, flowing at the base of a precipitous wall of rock, the Glacier di Fex poured down towards a deep gorge. On the further side of it rose the smooth and unsullied domes of the Piz Tremoggia; beyond that again, thrown up, as it were, out of a huge expanse of snow, the black and serrated edges of the Monte della Disgrazia, a mountain whose valleys have as yet been rarely visited, whose rugged head no daring Alpine traveller has hitherto attempted to scale. Far, far away to W. and N. were spread range on range of mountains. The chain of Monte Rosa, the Bernese Ober-

land, and, still more distant, the mountains of Savoy, were distinctly visible, and stood out clear and sharply-defined in the transparent and cloudless atmosphere. It was a sight to wonder at, and feast one's eyes upon, not to describe.

We were amused by the very loose and inaccurate manner in which it pleased our guides to give names to various distant peaks. Admirably acquainted with their own especial district, they evidently considered themselves bound to be equally well instructed in the appellations of the remote and unknown hills. So, without the smallest hesitation, they lifted their eyes to the strange mountains, and incontinently christened them. Having determined, unfortunately, that the chain of Monte Rosa was the range of the Oberland, they framed their answers with entire consistency upon that hypothesis. Monte Rosa did duty as the Schreckhorn, the Mischabel as the Jungfrau, and so on. It was by no means obvious how we should be able to descend upon the Fex glacier. We coasted along the head of the Rosegg glacier, turning towards our left till we came to a sort of cut or door in the rock, up and through which we climbed, and, casting a last look at the Rosegg glacier, found ourselves on a pinnacle of rugged broken crags immediately overhanging the Fex glacier. The gate through which we had just passed was so narrow, and so entirely hidden by what may be likened to an impervious thicket of bristling spikes, that, seen from below, no one would imagine that an exit could be found in that direction. The point on which we were now perched still commanded a superb outlook, though not so extensive as that from the proper col of the Rosegg glacier, an intervening barrier of rock shutting out one portion of the distance. Monte della Disgrazia was still conspicuous; and Piz Tremoggia, with

its round and snow-covered crown, stood sentinel at the ridge whence the Scersen and Fex glaciers respectively fall.

The descent upon the Fex glacier is by an almost perpendicular and difficult couloir of rock. With favourable conditions of temperature, it might probably be made without much danger. We found, however, that the sharpness of the frost had just iced over the rocks, and covered them with a thin coating, that rendered it nearly impossible to get any hold for hands or feet. Hands, feet, and batôn slipped off the polished surface, and the ice was so entirely superficial—about the thickness of a fourpenny piece—that the usual resource of cutting steps was out of the question. Under the circumstances, we tied ourselves together, and, first lowering Fleuri carefully down to the most practicable landing-place, and waiting till he had fixed himself as firmly as he was able, dropped ourselves successively upon him. Descending in this rather ignominious fashion from ledge to ledge, and then coasting round alternate cliffs and snow-slides, we found ourselves, after some amusement, and a few bruises and scratches, safely landed on the upper slopes of the Fex glacier. Looking back, it was not easy to make out the line of our descent. We examined the precipices on this side closely, and fancied that at one or two other points a better path might have been hit upon. Fleuri, however, said that he had on the former occasion attentively reconnoitred the whole face of the precipice, and had selected the route we had taken as the only feasible one. In one hour and a half from the time we left the Rosegg-Thor, we arrived at the crest of the second col, which we named provisionally the Col de Scersen. It must be considerably lower than the Col de Rosegg, but we had no means of estimating their respective elevation with any degree of accuracy. The

Scersen glacier runs at first in an easterly direction at the back of the Bernina chain. A line of splendid crags, among which, besides the mighty Piz Bernina itself, Monte Caspoggio, Monte Rosso di Scersen, and the Piz Palü are most prominent, impend over it. The inclination of the upper slopes of the glacier is at first very gradual; then sweeping round to the S. at almost a right angle, it topples over, and, dropping into the head of the Val Lanterna, disappears through a narrow rent in the mountains. We descended the glacier for about an hour in an oblique direction, steering towards a low reef of rocks, that for some hundreds of yards formed the only barrier between the ice-river and the Val d'Entova, a branch of the long valley of Malenca, far below. We stepped off the ice on to this low reef. It looked as if a very slight rise in the elevation of the glacier would send a stream of ice falling in a new channel down the mountain. It was like a brimming river just ready to burst its banks. We chose a sunny corner, and made our mid-day halt before setting forth once more on the interminable descent to Chiesa. Fleuri told us that there was a practicable pass by which you might get from the Scersen to the head of the Palü glacier; and, once on its surface, you could descend without much difficulty its entire length to the great road on the Bernina. This would probably be a most interesting excursion, as the Palü glacier is by many said to be the most exquisitely beautiful of all glaciers; but as it would have been necessary to have encamped out in the forest, it would have required far greater preparation than we had made. In fine summer weather, when days are long and nights not too cold, I imagine that the passage might be effected without overmuch exertion or risk.

Soon after 1 o'clock we were once more *en route*. The first part of the descent over the shoulder of Monte

Nero, a ridge dividing the Val Lanterna from the Val Malenca, is exceedingly steep, over loose stones and slippery grass. A little caution was requisite to avoid a headlong career into the dry and rugged bed of the torrent, which, choked with layers of white stones, shone bright below. Once down among the meadows and woods, the road was easy enough, but it required more than three hours' fast walking before we reached Chiesa. We were long deluded by the sight of the church of the neighbouring village of Primolo. It seemed always close, but had an objectionable habit of constantly receding and retiring round the next corner as we advanced. The natives of the valley whom we encountered at intervals, gazed upon us with an air of considerable amazement, as much as to say, "whence, in the name of all the saints in the calendar, do you come?" and when we said from Pontresina that morning, their ejaculations of astonishment were manifold. We arrived at Chiesa soon after 4 o'clock, and so concluded one of the finest walks that I have ever taken. We were twelve hours out, but of these at least two and a half were given to stoppages.

Chiesa is a dirty, dilapidated, picturesque Italian village. Even there, however, is a choice of hotels. Having been warned beforehand in bitter terms by a friend against the rival establishment, we went to the "Osteria Antica," and were ushered through a queer passage up a forlorn and ruinous staircase to the best room. It contained several beds, but had a mouldy smell, and the bed-covers were strewn with the droppings of plaster from the ceiling. To say that the floor was dirty would be using far too mild a term. We threw open the windows, and, coiling ourselves up on two rickety chairs, sat patiently waiting to be devoured. On our return from supper, however, we found, to our surprise and delight, that a wonderful trans-

formation had been effected. Sheets of snowy whiteness had been disinterred from the depths of an old oak chest ; and as, by skilful manœuvring, we managed to leave behind on the floor all the beasts with which it swarmed, we passed a comfortable night, and had the infinite satisfaction of hearing in our dreams the baffled persecutors gnashing their teeth in vain and impotent fury beneath. Three generations assisted at our supper,—an old withered woman, her little grandchild, and our hostess, its mother. The old lady was very curious as to why and whence we came, and sat by us with the most benevolent intentions of making herself agreeable. But as, on every answer to her questions, there followed a fervent appeal to the Madonna, and an impassioned expectoration towards every point of the compass, that made our blood run cold, we enjoyed the privileges of her society with very mingled feelings. A miraculous *turta* (Germanicè, I suppose, *Küchen*), the *pièce de résistance* of our evening meal, ought not to pass unrecorded. It was evidently a triumph of the chef's artistic genius, and was the result of my endeavour to explain, in intelligible *patois*, that, having consumed in the course of the day a sufficient supply of meat, we desired something of a more unsubstantial and airy nature for tea. We all parted excellent friends the next morning ; our large-eyed hostess apologised for deficiencies of *cuisine* and comfort, but said, "travellers seldom visited their little village." We replied, as was indeed the case, that she had made us very comfortable ; and that, as she would probably find herself invaded in future years by a gradually increasing number of tourists, she might easily by degrees set up all that was requisite to satisfy the moderate wants of a pedestrian.

On the 9th of September we walked from Chiesa to Poschiavo by the Passo di Canciano, in ten hours, in-

clusive of two for rest. The path follows the valley of Lanzada till all further progress seems forbidden by a gigantic barrier of rock that forms the eastern boundary of the valley. These rocks are surmounted by a steep zigzag called "the ladders." Down this hard and stony path the entire population of two small villages were carrying huge sacks of charcoal into the valley. Old men and women, little boys and girls, came staggering on, bending under the weight of a burden that seemed beyond all proportion too great for their strength. Their earnings for this labour were infinitesimally small; but, trifling as it appeared, they were all, we were assured, eager for the employment. It was their harvest time.

This zigzag path leads out upon a wood, after traversing which you descend on to a beautiful green pasture, entirely surrounded by noble cliffs, which, rising over a broken and richly-wooded rocky basin, form a second barrier, that has similarly to be climbed by means of another steep and winding track. There are a few *châlets*, constituting the hamlet of Franscia, scattered over the Alp. At one of these we obtained a cooling draught of milk. It is probably the only place on the route where refreshment of any kind can be procured.

After leaving the *châlet*, we crossed a boulder-strewn glen, the mouth of the Val Lanterna, and the stream that flows from the Scersen glacier. Then up through shady woods till a second level was attained, and the path joins the stream that flows out of the Glacier of Fellaria, or, as our guides called it, the Glacier of Verona, and, following its course through the Campo Moro, a narrow valley, rises with moderate rapidity to the head of the pass. In this section of our journey three points of interest deserve especial mention. First, a superb view of the Monte della Disgrazia, as seen over a bright green meadow,

just beyond the second zigzag ; it magnificently closes the western opening of the valley. Secondly, a very singular waterfall: the river runs along the bottom of a fissure that it has worn for itself, so narrow that the masses of stone which have fallen from the mountains on either side bridge over, and almost conceal, the tortuous rift. The sound of falling water alone indicates the presence of a river. The traveller should find that spot where the foaming stream is suddenly launched into a dark abyss. Till the eye has become accustomed to the obscurity, the cataract seems utterly lost, but after a time may be again dimly discerned swirling and eddying in the depths of its subterraneous channel. Thirdly, the peak and glacier of Verona. A short distance above the waterfall, we crossed by a crazy and tottering bridge to the left bank of the stream, and, ascending obliquely the shoulder of the mountain, reached the bare and desolate valley of Poschiavina, which runs almost at right angles to the Val Campo Moro which we had quitted.

We rested for some hours by a clear spring of water that, rising at the base of the mountain, spreads an oasis of green and fertile meadow in an otherwise melancholy gorge. A few *châlets*—the *châlets* of Poschiavina—have sprung up by it. The peak and glacier of Verona, the Piz Palü, and other points of the Bernina chain, forming a grand group, are here seen to great advantage. Here, too, we take our last look at the magnificent summits of the Disgrazia.

From these *châlets*, in another hour and a quarter, we arrived at the culminating point of the pass of Canciano, whence you look down upon the lake of Poschiavo and the straight valley of the Bernina, while close on your right the huge cone of the Piz Canciano, or Piz Fontana, with scanty shreds of glaciers clinging to its abrupt precipices,

towers aloft. We descended rapidly, partly through meadows and partly by an aggravatingly rough and dusty cattle track, to Poschiavo. The third day we returned to Pontresina. The rain which Fleuri had all along been prophesying came at last; an impenetrable mist obscured the mountains, and blotted out the vaunted beauties of the Palü glacier. A fierce and icy wind howled through the pass, and it was only by dint of hard walking that we could contrive to keep up any circulation in our chilled limbs. We were back at Pontresina at 1 o'clock. The rain had ceased soon after we had reached the northern side of the pass, though dense clouds still hung over the mountains; so that we finished our day in moderate comfort, and walked down to Samaden in the afternoon, delighted with our tour of the Bernina.

I do not think that it would be possible to make a round from Pontresina that would show more of the peculiar features and special beauties of the chain of the Bernina. It can be made without difficulty by any one accustomed to traverse the higher passes of the Alps; and, with the exception of the night at the *châlet* in the Val Rosegg, fair quarters can be obtained for every evening. The *châlet* itself is not really an exception, for a night may be spent there with at least as much comfort as in many more pretentious hotels.

Alexander Fleuri and Florian Jenni are good guides for the expedition. The day that we were on the ice we had every reason to be satisfied with them. They were obliging and attentive, seemed to be skilful icemen, and Fleuri, at least, had a very competent knowledge of the country. Jenni, I believe, crossed the pass, like ourselves, for the first time. The next day, indeed, we had some difficulty in getting them on. They loitered at first excessively on the road, and were quite content that we

should lose or find the way as chance would have it. The real truth, I fancy, was, that they had indulged rather too freely in the strong Italian wines at Chiesa, and were suffering in consequence — to use the vernacular expression — from “*Kazen-jammer*.”

The accommodation at Pontresina is as yet scarcely equal to the demands upon it, and the village itself is calamitously filthy and ill-paved. Now that the tide of travellers is turning that way, there will doubtless be a speedy improvement. The Hôtel de la Vue de Bernina at Samaden is exceedingly comfortable, and for near expeditions would prove to be very convenient head-quarters. On the whole, I can imagine few places more pleasant and attractive as a residence for the summer months than some one of these villages, such as Pontresina, Samaden, or the baths of St. Moritz, in the Upper Engadine. Owing to the high elevation of the valley, more than 5000 feet above the level of the sea, the purity and healthful freshness of the air is most remarkable. Lovely paths, branching out in all directions, lead through the abundant fir woods that clothe the mountain side; while nothing can be more striking than the effect produced by the line of snowy mountains and blue glaciers that are seen rising close over the trees, and fringing, as it were, the darkness of the fir woods with a border of dazzling white. The whole mirrored in the clear waters of many a mountain lake and tarn, forms such a rare combination of sublime grandeur and softest beauty as can rarely be met with elsewhere.

2. THE PIZZO BERNINA.

BY EDWARD SHIRLEY KENNEDY, M.A.

"Dieser Sturz der Gletscherbäche,
 Was ist also gross und kühn?
 Deiner Seen Spiegelfläche,
 Was ist so krystallen-grün?
 Felsenwand und Schneegefilde,
 Wald und Trift, verklärt im Inn,
 Schönstes Bild von Ernst und Milde:
 Sei gegrüsst, mein Engadin!" — *Volkslied.*

As this rush of glacier streams,
 What can be so grand and bold?
 As this mirror of thy lakes,
 What can be so crystal-green?
 Rocky ramparts, fields of snow,
 Copse and mead, seen clear in Inn,
 Beauteous scene, severe and soft,
 All hail to thee, mine Engadine!

IN the year 1322 of the Christian era, the Count Monfort assembled an armed multitude in the Ober-Engadin or Upper Valley of the Inn. This host, composed partly of inhabitants of the valley, partly of strangers from the west of Switzerland, was called the army of the Bishop. It was a wild and savage horde, too eager for plunder to remain long inactive.

After a short time spent in preparation, the invaders crossed the mountain range of the Pizzo Vadred, and, pouring down upon the peaceful hamlet of Davos am Platz, scattered the inhabitants, burnt their houses, and lifted their cattle. Those who planned this raid did not

reap the expected reward. The peasants, who had at first fled in fear, now turned again in courage. A brave band, with the chieftain Lubens Guler at their head, quickly assembled and overtook their foe in the middle of the vale of Dischma, at a spot called the "*Kriegsmatten*" or "*Warplain*." This name, derived from that bloody strife, has been proudly retained until the present day; and fathers yet tell their children how their ancestors met the foe upon that fatal field, and how, after a hard-fought fight, the plunderers of their homesteads fled in inextricable confusion. After this defeat, the spoilers took refuge in the mountain fastnesses, and there, uniting with a detachment of their own party who were driving off the cattle, they re-formed their broken ranks, and thus constituted a band of no inconsiderable importance.

Meanwhile the chieftain Domat, lord of Vatz, had collected a force in order to intercept their retreat. The victors, too, in the fight on the *Kriegsmatten* lost not an hour in the pursuit; while their familiarity with the mountain passes enabled them to make a detour and effect a junction with their friends. The "spoil-encumbered foe" retreated but slowly; and when, after a toilsome ascent, they reached, jaded and wearied, the summit of the Scaletta pass, they found themselves face to face with an unexpected enemy — an enemy encouraged by the accession of friendly succours, and thirsting for revenge. The fight was not long doubtful. Scarcely a tenth part of the invader's band escaped to carry home the tidings of disaster, while the rest of the bishop's host was pursued by Domat as far as Greifenstein, a spot situated near the junction of the rivers Albula and Landwasser, and lying between Filisur and Alveneu. The few who escaped the slaughter of battle fell in the pursuit.

Many relics of this foray have been met with; standard-

poles and morgen-sterns have been discovered, and bones and skulls are occasionally turned up by the husbandman's spade. Since that memorable day the pass has been called the "Scaletta" or "Skeleton" pass.

Through the village of Davos am Platz, up the valley of Dischma, past the Kriegsmatten and above the Scaletta pass, two brethren of mountain-craft followed, in the month of July 1861, the route taken on that fearful day by the handful of combatants who sought to escape from the avengers of the Scaletta. My companion was John Frederick Hardy, an Alpestrian known to most Swiss readers and Swiss travellers.

Who were these so-called bishop's men that carried internecine strife and contention into the mountain villages of Switzerland? Were they intruders from other lands, or were they aboriginal autochthones? It has been supposed that some members of the band were descended from colonies of Saracens, who at various periods had succeeded in establishing themselves in several districts of Switzerland. Traces of the Arabic language are to be found in many spots, and especially in the neighbourhood of Saas. The well-known Mischabel range, that separates the Saas valley from that of Zermatt, derives its name from an Arabic word signifying "Middle Peak." *

Treading in the steps of these supposed followers of the Arabian prophet, the explorer of this district may either descend by the Scaletta pass to Zernetz in the upper valley of the Inn, or ascend the Schwartz-horn, and select the Grialetsch pass to the north of the Pizzo Vadred. This latter route was taken by Hardy and myself. I will not enter into details of this part of our wanderings. Suffice it to say that the view from the Schwartz-horn is remarkably fine, exceeding, in the opinion of many, that

* See note at the end of this article.

obtained from the far-famed Pizzo Languard. It is an ascent strongly to be recommended. Its estimated height above the sea-level is 10,556 feet. We descended rapidly from the summit of the Schwartz-horn to a spot near the col of the Grialetsch pass, and, leaving a beautiful blue lake, almost a twin-sister of the Märjelen-see, crowded with snowy blocks of ice, upon our left, suddenly obtained a full view of the Grialetsch glacier. It was exceedingly grand, partly of dazzling whiteness, partly deeply crevassed and broken into ice-falls, with a dark moraine running down the centre; while in the background, partially shrouded in wreaths of mist, towered the craggy peaks of the Pizzo Vadred. I hardly know a finer glacier view from so comparatively low an elevation. Descending to Sûs, we proceeded rapidly onwards, by diligence and car, up the valley of the Inn, through Zernetz and Sutz, to Samaden.

As we approached the town of Samaden, the sun was setting, and at the same moment the glaciers of Rosegg and Tschierva, as well as the heights of Pizzo Rosegg and Pizzo Bernina, whence they flow, burst for the first time on our sight. That beautiful "Abend-glûhen," that "evening glow," which, as the sun descends, tints the higher snows, met our gaze. With this peculiar and attractive feature of the upper regions nearly all Swiss travellers are familiar. The enthusiastic tyro has admired it from the Righi, and the cragsman has hailed it when seen from his night-encampment high up the mountain-side; but it has rarely fallen to the lot of any to witness its display in greater perfection. As our eye is dwelling upon this glory of the even-tide, the thought that the ruby coronet is resting upon the head of the giant whom we propose to attack, adds not a little to the charm. That giant is now calmly resting in soft tranquillity, before he

assumes his cold, grey night-mantle, and retires from the glare of day ; and he looks as though the foot of childhood might tread, without difficulty and without danger, upon the placid wreaths of snow that twine themselves around his brow. And now, while evening is drawing on apace, the ruddy warmth that suffused the Alpine realms is no longer seen ; each mountain outline grows less and less distinct, and the whole range is rapidly disappearing. Another minute, and night, that has already claimed the valleys as her own, will assert her dominion over even the towering monarchs of the land. But no ! The wondrous effects of the second illumination descend upon the ice-world above ; subdued yet still glowing hues tint once more the snowy summits, and the western light, with unwonted potency, throws from the mountains a shadow, soft, yet distinct, upon the undulating snow-field beyond. At the same time, the opposite horizon, as if in rivalry, is bathed in light, and in another moment the moon, nearly at her full, rises in the east. But still some time elapses before the west yields to the moon's increasing power, and long, flickering shadows, still tending towards the east, attest, like the wavering plumes of an outnumbered host, that, though the battle may be lost, the body-guards of the sovereign disdain to quit the field so long as their lord is seen striving for the mastery.

Another hour's drive carried us from Samaden to Pontresina. The ancient path following the turbulent stream, which forms one of the many tributaries of the Inn, came to an abrupt termination near the foot of the Morteratsch glacier. It was reserved to the skill of more modern times to construct the easy diligence road of the Bernina Pass, which, skirting the transparent lakes of Bianco and Poschiavo, finally conducts the traveller into the plains of Italy. All this time we have followed the handful of men who

escaped from the fight upon the Kriegsmatten; and here we find further traces of their Arabian origin. The term "*Pont des Sarrasins*," or "Bridge of the Saracens," is supposed to have been the earlier appellation of the town, and to have been corrupted into Pontresina.

As is usual in a strange place, our eyes wandered right and left as we clattered up the stony street. It must have been a mutual sympathy in a mutual aversion that caused us both, while thus gazing around, simultaneously to make the same discovery—a discovery that tended somewhat to damp our hopes of an agreeable ascent. We suddenly beheld a board so placed that none could miss it, projecting over the pavement, and inscribed on both sides with those characters which they of Chamounix have so long delighted to honour—"Bureau des Guides." Alas! during our progress up the remainder of the street, which, fortunately for our well-being, was not very long, we were haunted with visions of "*tariffs*," "*guides chefs*," et id genus omne. On our arrival at the inn-door we were welcomed by the host, Herr Kredig, and at once surrounded by sundry hangers-on. I carried the poles, and Hardy, as usual, acting in the fulfilment of his destiny, and anticipating, as in a figure, his future fate, bore the rope. Whether there was anything remarkable in our appearance that attracted attention, or whether it was the striking effect produced by Hardy with the rope circled around his neck, it is impossible to say; but, whatever the cause, our ears were immediately assailed by the comment, "That's for the Bernina ascent."

Our first act was to fall in with the prejudices of the place and to desire the attendance of the "Guide Chef." Signor Colani, the representative of a generation of hunters, soon put in an appearance, and we ventured to suggest our wish to attempt the Pizzo Bernina. The Signor did not

receive the proposal so favourably as we had anticipated, and shortly withdrew, signifying that he would send another guide for consultation. In the mean time supper was announced, but hardly had we swallowed a mouthful of soup, when a tall, brawny, broad-shouldered fellow entered the *salle*, and introduced himself as the Bernina guide. The consultation commenced and was carried on under difficulties; for to sustain conversation in a foreign tongue when the mouth is full of hot soup decidedly requires no little skill. Our new friend told us that the undertaking was somewhat unusual. For this announcement we were prepared. He, however, so frequently repeated the expressive sentence, "*Es ist kein Spass, meine Herren*," "It is no joke, gentlemen," and by his manner gave so much additional weight to the words, that we began to think one of two things must be the case — either that our guide was an impostor, or else that our mountain was very much the reverse.

As a matter of course, the old difficulty arose as to the amount of payment. The established tariff came into play, and we were powerless. Although no stranger had as yet made the ascent, we found that a rule already existed to the effect that each traveller should pay 100 francs, that the principal guide should take what number of porters or subordinates he pleased, and that it should be his duty to find ropes, hatchets, blankets, and every other possible requisite, with the exception of provisions. To this arrangement we finally acceded. Thus far all was smooth; but our guide evidently had his suspicions that the undertaking would prove too much for the English travellers. I do not blame him for his caution. After a little hesitation, however, he proposed that we should together make a previous "*Probe-reise*," or "Trial trip," a little experiment, in fact, to ascertain the probability of ultimate success.

Thus commenced our acquaintance with Peter Jenni. There was no friendship at first sight, no eager rushing into premature confidence. On the contrary, so far as I can judge, there was some little misgiving on both sides. We thought that he started unnecessary difficulties, and evinced so excessive an amount of hesitation in regard to the whole proceeding, that we were by no means prepossessed in his favour; while he evidently considered that we overestimated our own powers, and aspired to an undertaking of which we were not capable. What has been the result? That both Hardy and I agree that it would be difficult to meet with a man who so preeminently possesses all the qualities necessary for a first-rate guide. Let Chamouniards boast of their Simond and their Croz; let Oberlanders point to their Lauener and their Anderegg, and Valaisians extol their Bortis and their Perren—all good men and true—yet I venture to say that all these would meet with their match in Peter Jenni. To him may justly be ascribed most careful foresight in the preparation of all that tends to the success of the expedition, especial watchfulness for the constant safety of the traveller, and instant readiness to render him assistance in positions of unusual difficulty; while in that quality which is, perhaps, the one most essential to the true Alpestrian, the quality of perseverance, he particularly excels. To him belong an indomitable persistency and a self-reliant disregard of advice offered by irresolute subordinates. Of all these qualities we had ample experience in our ascent of the Pizzo Bernina. The next morning we had an interview with Jenni. The "*Probe-reise*" was given up, for it was deemed unadvisable to waste, in an unnecessary excursion, and at a time of doubtful weather, what might prove to be but a solitary fine day. It was therefore quickly settled that we should make a start for the sleeping quarters that

afternoon. In the mean time we sallied out, inspected Jenni's preparations, ordered nails to be put in our boots, and felt ourselves the lions of the town—the observed of all observers. Unable to endure the gaze of an admiring populace, we sought the shelter of our inn, and there quietly whiled away the time, by settling down to accounts, diaries, and letter-writing. At 1.15 dinner was served. Meanwhile clouds had collected, and they were now rolling over the mountain ridges into the valleys below. Before our meal was finished, the rain came down heavily, and a murky afternoon succeeded the brilliant morning. The expedition was necessarily given up. Such are the disappointments to which not only all Alpine travellers, but also quiet *al-fresco* parties in England are subject. Here was an opportunity for indulging in valuable novel and moral reflections. We must patiently bear the ills which “flesh is heir to,” and it is well if this be done without too much grumbling.

The next day it rained, and the next, and the next. And then even the moraliser left off moralising, and we did begin to lose patience, and we did begin to grumble. It is in such positions that the native genius of a man is brought out, and it is to such weather that we are indebted for the exhibition of another of Hardy's multitudinous powers,—one that under the bright glow of sunshine might have lain dormant for ever. In point of fact, the moraliser disappeared, and the poet assumed his place. I hope the reader, whether fair or unfair, will grumble when he finds the “continuity of the narrative” broken by my companion's composition; for we shall both then be in an equally unamiable mood, and I shall consequently be the more sure of his sympathy.

THE ALPINE'S LAMENT.

Pity the sorrows of an Alpine swell,
Whose sturdy limbs have brought him to explore
The glaciers where the chamois ever dwell,
And rocks round which the lammergeyers soar.

With brightest hopes of many a new ascent,
Serene he started by the Dover train,
And, still on conquests in the Alps intent,
Marked not the blustering of the troubled main.

I saw him, wrapt in all his self-conceit,
Expound his schemes to those who sat beside ;
And still he promised many a mighty feat,
On horns and stocks that never had been tried.

With head erect, and self-approving eye,
Of all the lesser heights he spake with scorn ;
He patronised Mont Blanc, and thought he'd try
Pizzo Bernina and the Matterhorn.

Behold him now, the victim of despair,
Close cribb'd in Pontresina's narrow inn ;
Listless he sits upon his wooden chair,
And sighs for honours that he cannot win.

For, patter, patter, with incessant fall,
Through weary days down pours th' incessant rain ;
And still to catch some glimpse of mountains tall
Through steaming mists he strains his eyes in vain.

But lo ! one vast impenetrable cloud
Mountains and hills and vales alike enfolds ;
While, shut within, with yells of mockery loud,
The demon of the storm his revel holds.

Return, my Alpine, to thy mother's lap !
Refresh thyself with British steaks and beer !
A sadder and a wiser man, mayhap
Thou 'lt stay in London streets another year !

On Monday, July 22, 1861, being the fifth day of our stay, Hardy and I, after our one o'clock dinner, left Kredig's inn at Pontresina, and walked up the village to Jenni's

mansion, where he carried on his ordinary business of cordwainer and general worker in leather. It is a curious fact that most of the best guides are shoemakers by trade. Is this because they know practically the necessity of being well-shod, and find all others in the trade mere cobblers? We found Jenni's preparations in a forward state, and, after a quarter of an hour's delay, all started in an open carriage and one, fully equipped for our projected excursion.

Oh that one skilled in photographic art had been at hand! On the low front seat of the vehicle, or, to speak *more Alpino*, at the lower extremity of the leathern apron-slope, sat the driver and Jenni, with their legs suspended over the crevass beyond; immediately above the ridge in which the upper extremity of the slope terminated, appeared the heads of Hardy and Kennedy, also those of their poles, the lower portions of each being engulfed in the berg-schrund. Beyond these capital features, and at a somewhat greater elevation, there emerged above the highest ridge the heads and arms that belonged to Jenni's brother, Fleuri, and to his companion Alexander. So much of these worthies as was visible was decorated in the most formidable manner. Leather belts, and interminable coils of rope, gave the group the semblance of another Laocoon. Spikes, axes, and a hooked machine like that used by the icemen of the "Royal Humane Society" for rescuing persons "apparently drowned," suffered themselves partially to appear; while conspicuously across their shoulders was carried a somewhat novel, but, as it afterwards turned out, a very useful, instrument in the form of a dustman's shovel.

We drove in this style about three miles along the high road of the Bernina pass, until we reached the lower end of the valley, down which there flows, from the Bernina, the "Vadret da Morteratsch," or Morteratsch glacier. It was long supposed that the Pizzo Morteratsch was the

culminating point of the whole range, and consequently this peak gives its name to the principal glacier, while the Pizzo Bernina itself is wholly unrepresented in glacier nomenclature. At the junction of this lateral valley with the main pass, at a spot called Plattas, we alighted, and the short pause that ensued gave ample time to examine the appearance of the western sky. This was the windward quarter; and, alas! the anticipations of evil that an occasional backward glance *en route* had led us to form, were about to be realised. A black, thundery cloud was creeping up, and veiling the lower valleys in a dirty whiteness. However, there was no hesitation; "forwards" was the word.

The beginning of the valley is nearly level. A rude bridge carried us over the transparent stream that takes its rise in the slopes of the Diavolezza, but is almost immediately lost in the turbid water from the glacier,—a cloudy fate that awaits all the sparkling waters of Switzerland, and that, typical of the life of man, speaks of the inevitable hour when beauty passeth away. It is a destiny common alike to the tiny rill when sportively dancing down the mountain's side, and to the rapid Rhone as, revelling in strength and beauty, she rushes from the lake.

We soon reached the foot of the glacier, and, keeping the western bank, climbed by the usual rough, irregular path, until we had gained the level of its surface. Again the path was but little inclined, and again more steep as we gradually rose above the glacier, and the scene opened out to view. A few heavy drops of rain warned us to hasten onwards.

After an easy walk from the high road of about three hours, we reached at six o'clock in the evening the so-called ch  let of Boval, situated at a height of some 9000 feet above the level of the sea. We were but just in time;

almost immediately the storm burst forth in all its fury. The vapoury mists whirled to and fro, and writhing, as if in agony, beneath the blast, were contorted into the most fantastic forms; while lightning played and thunder rolled around. The chalet, erected in the wonted *alto-montana* style of architecture, opened as wide as it could its sheltering portals. It was entirely deserted. The wind whistled through the crannies of the stony walls; the fir-beams creaked in their uneasy beds; the wooden shingles rattled on the roof; the rain drops pattered on the earthen floor; and the log-fire, freshly kindled, filled the dwelling with pungent smoke.

The five—guides and travellers—completely filled the hut; at least Hardy and I had indulged ourselves in that persuasion. Presently, however, the two herdsmen of the spot appeared upon the scene—fine-looking fellows of the Bergamesque race, presenting a marked contrast to their brethren of the western parts of Switzerland, with bright dark eyes, wide powerful jaws, white prominent teeth, and manly independent bearing. They wore high conical hats on their heads, and clattering wooden sabots on their feet; short black pipes in their mouths harmonised with their dark brown features, and long black cloaks on their shoulders formed no violent contrast to their dark brown legs. Their high conical hats and the long black cloaks were dripping wet. We could not refuse their owners the use of their own familiar home, and accordingly they entered in. The goatherd and the shepherd were followed by the goats and the sheep; they likewise entered in. These were closely followed by a she-ass and her foal. Hospitality could be stretched no further. There is a limit to everything, except it be to an infinite ascending series, or to the love with which such a series is regarded by the members of the Alpine Club. Hardy is

naturally more impatient than I; he accordingly levelled his pole and charged the latest intruders. His relatives fled; but lo! he made a discovery. The western sky was beginning to glow with the rays of the setting sun, and the thick darkness and vapour were slowly rolling away to the east.



VIEW FROM BOVAL, LOOKING SOUTH.

We quickly emerged into the open; stores were unpacked and preparations made for the evening meal. For the first time we had now an opportunity of taking a survey of our position. Conspicuously in the foreground, rising from a bed of moss and Alpine roses, and partially clad with lichen of varied hue, a huge irregular mass of rock arrested attention. At a rough estimate it was 150 feet long and

50 feet wide, with a broken and partially level surface, cleft and indented with numerous fissures and depressions. Standing upon this "coign of vantage," our position was not dissimilar from that occupied by a visitor to the Montanvert at Chamounix, save that we were at a higher elevation, and that our prospect was of a more extensive character. Looking backwards towards the north, the eye, following the whole lower course of the Morteratsch glacier, could discern, at the distance of some six miles, the abrupt termination which marked the ridge of its final ice-fall, and beyond this spot, the high road of the Bernina pass, winding between the bases of the Languard and the Diavolezza. Towards the west the rock upon which we stood rose some twenty feet above the general slope of the ground, forming a shelter to our hut, which, nestling against its side, seemed, from its prevailing colours and general appearance, to form but a portion of the whole. On the east, the rock went precipitously down, and almost overhung the glacier some 500 feet below. Turning our faces southwards, we could trace the upward course of the glacier, with its ice-falls and its bergschrunds, its broken moraines and its shattered islets of rugged rock; the whole enclosed by a grand irregular semicircle of snowy peaks. On the left of this amphitheatre rose the peaks of Mount Pers and the Pizzo Cambrena; in the centre towered up Pizzo di Palü, Pizzo Zupo, and the crags of the Crasta Güzza; while the shoulders and ridges that fell away on our right were the outlying buttresses of the Pizzo Bernina itself.

It was a fine sight to watch from this elevated spot the tempest's departing squadrons, as they fled before the rays of the western sun. Even in retreat they yielded not without a struggle, but hurled their Parthian missiles against their conqueror, as flash and report, though at ever longer

intervals, proved that the artillery of the storm was not yet silenced. And now, even in the moment of victory, when all above is clear in azure-brightness, he who has driven off the hosts of darkness, the mighty sun himself, sinks to rest. We who have witnessed this manifestation of his power, are not admitted to behold the splendour of his imperial throne; but glorious radiants, glittering coruscations from his triumphal crown, crimson and purple emblems streamed with gold, strike upwards, and proclaim upon the battle-field itself, in the very zenith of heaven, to whom the glory of the day belongs.

The murky darkness of the storm has passed away, but even while we look around, the last lingering light of day is rapidly waning. The mellowed softness of the evening twilight, while the air is unruffled by the slightest breath and the sky is illumined by a thousand twinkling stars, is shed upwards upon the scene. Now another and a deeper darkness enshrouds us. The living lights of space that burn like ether-floating lamps, alone are visible; for even the whitened peaks around—the last to disappear—are hidden from our sight.

The guides now kindled, with the pine-logs that they had carried up with them, a huge bonfire in the centre of our rock. The whole party at this time consisted of seven; the three guides, the two herdsmen, Hardy, and myself, and all of us negligently threw ourselves down upon the rock, where, wrapped in cloaks and rugs, we formed a picturesque group. Here we proposed to pass the night. The fire crackled and sparkled, the men smoked their pipes, and, to add to the hilarity of the evening, soon broke forth into songs and merriment. It has been mentioned already that our associates were of Bergamesque extraction. Can it be, that the influence of Donizetti of Bergamot was thus widely diffused among his countrymen, and that

through the herdsmen's strains there floated musically the master's melody? At times all would, with tacit consent, relapse into utter silence, and then it was that a soothing, and almost a melancholy feeling, would steal over us as we lay, far from the usual haunts of men, with every object in our immediate neighbourhood shrouded in impenetrable darkness. At times a film would arise and almost suspend the sense of vision, at times a shadowy light diffused itself in a vague, unearthly way; and then, while the lamps of heaven hung suspended from the deep dark vault above, around us there seemed to tower up to a preternatural height the weird and spectral forms of ghost-like mountains.

I was pensively watching a white and shapeless mass floating high up in heaven, and dreamily speculating whether it were a cloudlet, or a snowy peak deprived by darkness of all apparent connection with the earth beneath when suddenly its upper limit was edged with golden brilliancy. It was the moon herself; and soon the full orb arose, throwing a flood of light upon every object around. The expiring embers were rekindled; a dead juniper tree was thrown upon the burning pile, and ten thousand glittering sparks, red, yellow, and purple, were carried aloft. Our spirits rose, and all, thoroughly aroused, looked forward with hopes of success to our ascent.

All feeling of sleepiness had vanished, and accordingly the guides seized the favourable opportunity, and recommended us to turn in for the night. Under the circumstances it appeared rather a facetious suggestion. However, it was half-past ten, and we adjourned to the hut, one quarter of which was occupied by a kind of scaffold, that, raised about three and a half feet above the floor, did duty as a bedstead. Upon this couch Hardy and I reclined. It was certainly a change for the better. Our eyelids

were becoming heavy, when we were startled by a plaintive whine. A small white bitch, with three sightless puppies, nestled in one corner of the apartment, and the cry had been elicited as one of the hinds, throwing himself down in too great proximity to the nursery, had threatened to destroy the rising canine generation.

In a short time we were again in a dreamy dozing state, and past scenes recalled themselves to memory. How many a time had I sought to stretch my limbs upon these uneasy troughs, dignified by the natives with the name of beds! Memories of many similar scenes thronged the mind, as I now found myself again in similar circumstances. How the features of these spots are again and again repeated—the old familiar low central-spiked stools—the well-known dull humming sound of half-suppressed voices—the same fitful glare from the pine-log fire, as the untended embers crumble together!

I seemed at times to be at Boval; at other times to be in spots far removed. The deluding power of the enchanter obtained the mastery, and, obedient to the spell of his resistless wand, I was transported to the now well-frequented hut upon the Col du Mont Rouge. It was the recollection of an excursion in 1854, during which we had there taken refuge for the night. Stevenson and I, having made ourselves comfortable, had commenced our evening meal; but our companion Ainslie had departed upon an exploring expedition. Time had however elapsed, and we began to think that he ought to make his appearance; the reflection, however, did not greatly disturb us, for we had confidence in his powers. But, while cogitating upon his absence, it unexpectedly became our turn to feel that some evil was about to happen to ourselves; for most fearful sounds—hollow, crackling, rumbling—surround us; while detached fragments of the roof fall in and sadly damage our steaming

mess of hot bread and milk. Is it an avalanche? Is it an earthquake? Is it a tempest that has suddenly arisen? And what too has become of our poor friend Ainslie? Thick darkness has lowered down, without warning, upon the earth; overhead we hear that pattering of heavy drops which presages a hurricane; while on every side yawn vast chasms and precipices of unknown depth. Ainslie, however, though quite ignorant of the peculiar features of the spot, well knows the true direction of the *châlet*, and is slowly and carefully advancing. He is soon on treacherous ground, for the good alpenstock penetrates through the rotten surface. A few seconds more, and further progress is impossible. In vain he probes ahead, to the right hand, and to the left; on each side the stock pierces the rotten surface, and in front, even at his very feet, it goes down into a precipice of unknown depth.

In the mean time we have gone forth, lantern in hand, in search of our poor lost friend; and find him — on the gable-end of the hut, unconsciously poking down the stones of the roof into our mess of pottage. Thus we discover the cause of the threatened tempest.

So much for the transient dreams at the *châlet* of Boval. We are now no longer upon the *Tête Rouge*, but upon the shoulders of the *Bernina*; and an inexorable necessity quickly compels us to cast aside all dozing reveries, and to rouse ourselves up to stern realities.

Our attention was attracted by preparations for breakfast; and something less than an hour before midnight the guides suggested the propriety of rising. This process occupied but a short time. We adjourned to a moonlit sparkling rivulet close at hand to perform our morning ablutions, an operation in which, to our great astonishment and delight, we were joined by the guides. Such an event is almost unknown in the western parts of Switzerland, and it deserves,

I think, to be chronicled in the pages of "Peaks and Passes." They had brought with them, too, for joint use, almost an entire comb—a really fabulous amount of luggage. However, with that and the loan of our bit of soap, they made a very decent toilet.

We partook of a sort of supper-breakfast at half-past eleven P. M.; and at ten minutes past twelve, on the morning of the 23rd of July, 1861, were fairly under weigh. Slowly and carefully we picked our way over rugged lumps of rocks, generally at a level, but sometimes a little descending; and leaving the terminal ice-fall of the glacier that comes down from the Pizzo Tschierva close upon our right, reached, at 1.15, the side of the Morteratsch glacier. The ice was exactly vertical. Two or three steps cut with the axe, and Jenni, like a cat, had scrambled on to the surface. We quickly followed; and then went on at a rapid pace over the hard glacier, diagonally towards the base of the rocks that, bounding its channel on the east, separate it from the Vadret Pers. Thence the route led us, by steep zig-zags, over snow, alternating with stiffish rock climbing. Our speed did not slacken; and, although no difficulty whatever presented itself, some little amount of caution was required, for we were in deep shadow. After a while we found ourselves upon a ridge, with the Morteratsch glacier to our right, and the Vadret Pers to our left. The inclination of the ridge gradually increased, while the descent upon our right became steeper, and the rock on our left seemed to fall away precipitously. As yet the ridge was of fair width, but it soon narrowed; and at a spot where additional care was required, our course was entirely barred by a rocky mass, that, protruding like a huge irregular tower through the snow, broke the general continuity of the arête, and rose to a height of twenty feet directly in our path. If the reader, in momentary forgetfulness of his humanity, will

imagine himself to be a venturesome member of the feline race, daintily stepping up the inclined hip of an exceedingly steep Louis XIV. roof, and unexpectedly encountered by a vast stack of chimneys, he will the better understand the nature of the obstacle that bade us defiance. To scale it was impossible; so that while slowly ascending the steep snow-slope through which it pierced, we were puzzled to determine what proceedings Jenni would adopt. The dawn fortunately enabled him to see what he was about. Bringing the rope into use he fastened it to his waist, and slowly climbing down, along, and around the face of the rock, he insinuated here and there into diminutive crevasses either a toe or the tip of a finger. He was soon out of sight. We carefully held the rope tightened upon him, and after about 150 feet had been paid out he called to us to follow. A rather novel arrangement was adopted. Jenni had provided for each of the party a leathern belt, with a strong metal ring attached. The hither end of the rope was now passed through one of these rings and firmly grasped by those who remained stationary, while the other end was held by the invisible Jenni. Each man then clambered round in turn, only one effecting the transit at a time. The man in motion could choose his own pace, while the tightened rope, passing through the ring, saved him from those disagreeable alternations of slack and tight-rope dancing of which all mountain travellers complain, and which would try the powers of even Blondin himself. The device proved most successful for the greater portion of this, our first *mauvais pas*. It has one drawback. At those points where a gully in the rock has to be passed, and where it is consequently necessary to follow this concavity, the taughtness of the rope unavoidably makes it difficult to retain a foothold, and tends to drag the unfortunate traveller backwards into space.

All soon found themselves alongside of Jenni; but how they contrived to find footing there, remains a mystery. He again went ahead, now climbing up rocks, now cutting steps in ice, and we again followed. From the spot where we were standing, it was necessary to step on to what, for want of a better term, may be called the foot of a couloir. But let it not be supposed that the couloir here rose from easy ground. On the contrary, immediately below this spot, it broke away precipitously in a cataract of ice, and allowed us to see the rugged glacier some 1500 feet beneath. Jenni, with his usual activity, scrambled up this steep slope of ice, and we, assisted by the rope, were not far behind. It led us up at right angles to our old ridge, where it terminated in a sort of gap, between the first tower and another massy protuberance. Here a small piece of rock gave limited resting-place for the foot. Turning at right angles to the couloir we had just ascended, we continued by another along the general line of the ridge. This was equally difficult to climb, while the abyss beneath yawned with more threatening aspect, and the wavy downward sweep that afforded us precarious footing floated seemingly in airy lightness, and now, seen only in plan, presented a beautiful Hogarthian curve, dangerously fascinating to those whose æsthetic perception is more intense than their faculty for glacial adhesiveness.

Once more upon our old ridge, and fairly at the summit of this second couloir, Jenni turned round, and triumphantly pointing to the vanquished giant at our feet, exclaimed, "*Das ist die Festung der Gmsen Freiheit.*" "That is the fortress of the chamois' liberty:" an appellation bestowed upon it because, if a chamois can place this bulwark between himself and the hunter, his freedom is secured. At this moment the sun rose. We were at a height of some 12,000 feet above the sea. During the last

hour, the necessity of cutting steps had retarded progress, we were consequently becoming chilly, and the warm beams of the sun were most welcome. It was a gorgeous sunrise. In the east, far beyond the broken Pers glacier beneath, level with the eye, and overtopping the distant mountains, floated bars of golden cloud, from behind which the imprisoned sun gradually forced his way until he shone clear and distinct above them all. A little to the north of east, rose the Orteler Spitz with Monte Crystallo; behind us, to the north, sank down the ridge and steep couloir by which we had ascended. Far away to the north-west we could discern the Bernese Oberland, the Finsteraarhorn and Jungfrau being conspicuous; while comparatively in the immediate foreground, and yet at a distance of twenty-five miles, were lighted up the friendly features of our last new acquaintance the Schwartzhorn. Before us, towards the south, and embracing about a quarter of a mile, rose the peaks of the Bernina range, the Pizzo Cambrena, Pizzo di Palü, Pizzo Zupo. A little to the west of these, beyond the corridor, and seeming to crown the long vista, Monte della Disgrazia caught the sun's rays. On our right, the snow-fields, intersected by treacherous crevasses, gradually sloped away, and finally impended over the long corridor of the Morteratsch a chasm which we were seeking some means of crossing, and which divided us from the object of our hopes,—now seen rising in all his majesty through a cone of ice and snow,—the terminal peak of the Pizzo Bernina. Our shadows pointed directly towards the summit! Were we not right to hail this as a favourable omen? I called Hardy's attention to them, as they rested upon the snow: "Of what colour are they?" "Sky-blue," he replied. "And of what colour is the unshadowed snow?" Most Swiss travellers have admired sometimes the rosy, sometimes the golden hue, shed upon the snow

at early dawn. But on this day, such tints were entirely absent, and their place was supplied by a beautiful dove colour, rich and bright beyond description.

Talking this matter over with my friend Isaac Taylor, we have been tempted to suggest some sort of explanation. I should imagine that these curious phenomena of blue shadows and dove-colour snow-fields, were purely subjective. The eye would naturally see those colours that are complementary to the sun-rise tints upon which it had just been so intently gazing. While the preponderance of the yellow over the red in the orange combination, would cause the blue of the shadow to incline to purple rather than to green; purple being the tint also which dove-colour in shadow is seen to assume.

We went steadily forwards over snow-fields that presented no difficulty, but demanded only careful navigation in order to avoid open and concealed crevasses. Unfortunately we could find no means of descending upon the glacier-corridor on our right, and were therefore compelled to continue a course which led us, in a southerly direction, higher and higher above the snow-basin that we desired to reach. This perpetual tramp getting rather tedious, we whiled away the time by giving Jenni lessons in English. He was an apt scholar, but circumstances not being altogether favourable for studying a foreign tongue, he did not make any very great advance. I fear his acquisitions were limited to the expressions — "How do you?" "All serene!"

From English literature attention was easily diverted to the German language, or more correctly to the Romansch dialect. A subject was easily supplied. On our left hand is the Munt Pers, on our right hand is the Morteratsch glacier. Let us make a shot at derivation. Our inquiries are answered in this wise.

In the olden time a comely young shepherd from the Graubunden was struck by the charms of a Pontresina damsel of high degree. The Alp on the lower slopes of Munt Pers, a spot near the end of the Morteratsch glacier, was their trysting-place. According to wont, the maiden's parents objected to the unequal match, and the swain must give up the calling of a herdsman. The lovers plighted their troth, and parted. He enlisted and obtained promotion. No tidings of his weal came to the ears of his betrothed, and she, goaded on by her parents to espousal with another, died broken-hearted. The soldier came home too late, heard the evil tidings, sought the familiar Alp, and was seen of man no more. His name was Aratsch.

Afterwards, in the still of the evening, the old folk at the Alp would note how the damsel's wraith would enter the dairy department, taste the cream with a wooden spoon to see that all was right, and then with stealthy tread melt away in the gloaming. So often as she came, so often there floated on the pulseless air the gentle moan, "Mort Aratsch." They soon learnt to welcome her approach, for her blessing sweetened the milk, and under her ghostly care the yearly yield of cheese waxed wonderfully.

But another herdsman arose in the land, who knew not Aratsch nor his maiden all-forlorn. This man was of a practical turn of mind, and, eschewing all milk-tasters save himself, he one night roughly broke in upon the spirit of the milky whey. She cast upon the practical party one mildly reproachful look, and disappeared amid the crash of a howling tempest. Thenceforward the once fruitful pasture has been barren, the cows forget to give their milk, and the butter will not come. The Alp is forsaken, the glacier has advanced with giant strides, and the soil

once teeming with life is now riven by the wearing grind of desolating moraines. Hence "Mort Aratsch" and "Munt Pers:" "Aratsch is dead," "The mount is destroyed."

Here ended our etymological inquiries.

During the "*Stunde*" we had progressed so far, that six o'clock found us at a spot almost even with the southern or upper extremity of the Morteratsch glacier, and immediately below the summit of the Palü. We now made a determined push for the glacier-bed, which we had to cross, and which was 1000 feet below us. An ugly-looking crevasse, running through the névé and parallel to the glacier, directly intercepted our path, and compelled us to make a long zig-zag before we could effect a passage. Another quarter of an hour brought us, at 7.20, to the top of the icy col, which being the lowest part of the ridge connecting the Bernina with the Palü, forms the snow-shed whence the ice flows in two opposite directions—on the north towards the Bernina pass, on the south breaking away precipitously over the Sceerscen glacier that flows between the col and Monte della Disgrazzia. At this spot we made our second breakfast, but were rather given to grumbling, as we reflected that the last two hours, although they had brought us thus far onwards, had not enabled us to gain a foot in height.

Breakfast over, we commenced to ascend a kind of snowy cone—a main buttress—that springing from the snow-shed, and becoming steeper as we rose, finally terminated in an arête. The frontispiece to this volume represents this arête, with the Crasta Guizza in the back-ground. It possesses the usual characteristics—characteristics which indelibly impress themselves upon the memory of all who have seen them, and of which almost every writer endeavours, more or less successfully, to give his reader some idea. On our

left the ice, with but few interruptions, went sheer down to the glacier of 'Sceerscen; before us, and constituting our only line of march, the ridge rose at an angle of 35° ; and on our right, and suspended above the glacier far below it, there curled over a beautiful overhanging cornice of driven snow. With the ice-fall on our left, and the snow cornice on our right, we continued to ascend. Though the steepness of the incline might have caused difficulty, and the precipitous fall on each side have produced giddiness, yet to all appearance we had a good broad extent of snow, nearly two feet wide, upon which we might safely tread. But this was a treacherous drift, masking a pit-fall of unknown depth. Unavoidably keeping as much as possible to the right, in order to avoid the ice-wall, we found it necessary at every step to probe with the alpen-stock, so that we might not rest our weight upon the cornice. Thus we advanced, foot before foot, while at every thrust of the pole, a beautiful tunnel some two or three feet long, of blue snow, was pierced through the drift, and the eye, traversing its length, discerned the broken glacier deep, deep below. This is the oft-repeated tale. These are features familiar to every Swiss mountaineer. But they are features which all desire to reproduce.

The ridge at length became so steep that a rock, smooth and utterly impracticable cropped out before us quite bare of snow. We seemed at a dead lock; and, accordingly, a council of war was held. Jenni scanned the rock a-head, and an exceedingly queer looking ice-fall to the left, which eventually wound round to a spot above the rock. He then peered over the cornice down towards the glacier, and finally looked at us with an exceedingly comical expression of countenance, whereat we all laughed. In the mean time Hardy and I had been speculating as to the best mode of proceeding, and had signally failed, in attaining any satis-

factory result. The other guides were equally at fault. But

"Jenni, our guide, was a jolly old blade,
And a jolly old blade was he;
He called for his rope, and he called for his spade,
And he called for Hardy and me."

He then manfully went to work with his shovel, loosening the ridge, scattering the cornice, breaking down the icicles, destroying beauty, demolishing natural formations, dislodging the loose snow, and trampling the surface under foot. Before long, he had made a sort of platform, tolerably firm, and perhaps some two feet square. Upon this he quietly seated himself, rope in hand, and displacing poetic loveliness by the hard reality of prose, he substituted for the curling cornice of snow his own sturdy limbs, as he allowed them to dangle over the abyss beneath. He next beckoned to his brother, who was contemplating these preparations in astonishment. We could not discover the clue which Jenni, with allowable self-complacency, concealed within his own thoughts. There was evidently a little hesitation. "*Kommen Sie nur*," "Come along, then," said Jenni. And his brother, slowly advancing, soon stood beside him. The rope being securely attached to his waist, Jenni carefully lowered him down the face of the snow. I followed, supporting myself, as far as I was able, by digging alpenstock and heels into the wall of soft snow. Towards the right this wall went precipitously down any number of feet; but the spot at which we began to descend it was about thirty feet above a crevasse which, meeting this wall at right angles, swept from its commencement at its foot gradually round the cone of snow, and preserved for a considerable distance, a nearly level course.

At the bottom of the wall it was necessary to double oneself up so as to crawl under the overhanging icicles, and

take refuge within the mouth of the crevasse itself. Numerous pinnacles of ice rose up within its jaws, like huge jagged teeth; a few of these pierced through the covering of snow, others were entirely concealed; while the deep hollow of the crevasse itself was partly exposed to view, and partly covered over by a treacherous mass of soft snow. It was necessary to tread with the utmost caution, seeking with our poles some solitary spire of snow-covered yet solid ice on which to rest either a toe or a heel. This, however, is our only place of safety; but how the last man gets down I do not pretend to say. It is Jenni; and his motions are seemingly not subject to the ordinary laws of nature.

It is certainly a peculiar position. Here we are all in a row; with snow nearly up to his knees, each man is standing upon his own peculiar but invisible icy pedestal. On our right is the wall we have descended. On our left the crevasse extends away, following the curve of the cone. At our back the massive icy wall of the cavern rises irregularly some twenty feet, broken and split into fantastic forms of the most exquisite glittering blue, and reflecting from its shimmering surface, in prismatic hues, the direct rays of the sun. As if built with angular masses polished and glossy, the wall forms above our heads an overhanging vault of Moorish architecture. The greater part is in shadow, but pendants starting from obscurity are suspended like glittering stalactites from the roof, while down the cavern's sides

"clear streamlets run,
Blue in the shadow, silver in the sun."

In front hangs a fringe of enormous icicles, beyond which we cannot pass. Like captive songsters of the grove, we are pent within our frozen cage, and gaze between its icy bars upon the wondrous world without. Deep, deep down

beneath, is the corridor that we have passed; while groups of rocks and fields of snow, peaks infinitely varied in their form, and tumultuous glacier-oceans, each succeeding each in endless profusion, extend far away to the distant horizon.

In sport or wantonness we began to destroy the bars of our prison-house. Hardy and I laid about us lustily and ruthlessly with our poles, and the poor icicles came clattering down. The frozen fragments were at first scattered in every direction, but soon selected their own line of descent, and though they were immediately lost to sight, the ear long detected the peculiar sound as they rattled down the steep frozen snow before us. We thought it as well not to follow. Nor was it advisable to remain stationary. Time was valuable. Accordingly without further delay we proceeded on our march.

For a quarter of an hour we advanced without any alteration in level, following the line of the crevasse as it curved round the final cone, at a distance of about 250 feet below the summit. Thus on our right hand there fell away an exceedingly steep slope of snow and ice, while on our left the blue wall rose up with arching vault, overhanging cornice, and drooping fringe of crystals. At times we were upon the outer edge of the crevasse, and separated by it from the wall of ice. At times with this wall quite close upon our left, we carefully traced our way along the mouth of the crevasse, seeking beneath the treacherous snow for a firm foothold upon some jutting piece of ice.

We soon arrived at a spot immediately below the summit. Here Jenni, who as usual was leading, paused, and directing all to sit down upon the edge of the crevasse, he spent a few minutes in examination. At this moment we entertained considerable doubt of final success, as it was necessary to go straight up at an angle of 52° , through

deep snow lying generally upon ice. Jenni now said that he would only take one traveller to the summit. He was fearful lest a large number might cause an avalanche. Hardy kindly wished me to go, and when I urged him to accept Jenni's offer he proposed tossing up. I think Hardy had even a greater wish for the ascent than I had; and although our discussion assumed the form of one in which each desired to forego an advantage for the sake of the other, I am inclined to believe that the relinquishment of the ascent would have cost Hardy a greater effort of self-denial than it did his companion. Jenni's brother and I sat upon the snow and watched, not without anxiety, their proceedings. We could of course see every step that was taken. How vigorously Jenni drove his staff into the snow! How carefully he placed his foot! His object was to obtain the best possible hold, and at the same time to prevent the snow from becoming broken between the foot-steps. If five had ascended together, no care would have prevented the foot-holes from merging one into another; they would then have lost their distinct separation; the whole track would have become a confused mass of soft snow, and the probability of an avalanche would have been greatly increased.

Jenni's brother was by no means a jovial companion. In fact, we were both rather down in the mouth as we sat in silence. At length the silence was broken. A rush of snow not far from us went slithering down a steep slope of ice. Thereupon, my companion spoke, and hazarded an observation that, under the circumstances, was not of the most cheerful character. "I have a brother," he slowly murmured, "and you have a good friend, up there; let us watch and see whether they get to the top, or whether they are killed. Look! there is an avalanche, and they are climbing a steeper slope!" Had they slipped, it would

have been impossible for us to have afforded them the slightest assistance. I thought action better than inaction, and suggested the propriety of descending. He assented, and we pensively began to retrace our steps, and slowly descended until we reached the "*Festung der Gamsen Freiheit*." At this *mauvais pas*, and in melancholy mood, we waited our companions. But how had they fared, as they continued their somewhat perilous climb? Let Hardy tell.

Hardy's Narrative.

"When Jenni, after some minutes' consideration, informed us that he was ready to proceed 'mit einem Herr,' both Kennedy and I considered this to be final as to the impossibility of the whole party going further, and I at once suggested that we should toss up for that which I knew we both desired, the chance of completing the ascent. Kennedy, however, refused to toss, and most generously gave way to me. Looking back now, I fear I was selfish and greedy in allowing him to do so, but the 'Excelsior' spirit is not always one of self-denial, whatever Longfellow may say or sing to the contrary.

"Jenni and I now commenced the ascent of a very steep slope of snow, which was in anything but a satisfactory condition. Had we attempted zigzag, we should probably have loosened the whole surface snow, and been swept away with it into the abyss beneath. Jenni, therefore, made straight running for the summit, going hand over hand, kneading and kicking each step into solidity as he advanced. This mode of ascent brings a great deal of hard work upon the leader, as I discovered a week or two later when heading a party up the slopes of the Breithorn; but in those that follow, steadiness and caution alone are necessary, the labour for them being much the same as that required in going up the rounds of a ladder.

"More than once or twice during the next half-hour Jenni was glad to rest for a few seconds; but at 11.5 we stood together on the top, and looking back saw Alexander following by himself, though contrary to Jenni's express orders. From the point,

where we stood, a narrow ridge stretched away at the same level for about thirty feet, and then, turning at right angles, descended at a small inclination for about the same distance, where it abruptly terminated in a tremendous precipice, at the edge of which Jenni had fixed a flag-staff in 1858. As soon as Alexander had joined us, Jenni expressed a desire to proceed to this point. I, however, had satisfied myself that we were already at the summit, for I looked down easily upon the whole surface of the ridge, and laying my alpenstock level upon the snow on which we were perched, and bringing down my eye to it, I found that the whole of the outlying arête was concealed by it. As this arête was singularly narrow and ugly-looking, I endeavoured to persuade Jenni to remain where he was; but he had a reason, as it afterwards appeared, for pushing on further. Fastening the extremity of the rope, therefore, round his waist, we let it out by degrees, as he crawled forward upon his hands and knees, or sometimes slipped along with his legs on either side. As soon as he reached the flag-staff, he began poking about amongst the snow in a most mysterious manner, till at last, with an immense amount of exultation, he produced a bottle, whence he extracted a two-centime piece, that had lain their *perdue* since 1858, and in lieu of which he inserted a fragment of paper inscribed with the names of all our party; then carefully returning, but not without an awkward slip just at the angle, from which he cleverly recovered, he presented me with the two-centime piece with all due formality.

“The view from the top was unfortunately not so extensive as that which we had enjoyed lower down. The clouds had gathered rapidly, and though far beneath us, they concealed all but the highest peaks in our immediate neighbourhood. While discussing, the advantage of going along the ridge I have described, Jenni represented that though the point on which I decided to remain might be the “*höchste spitze*,” the *aussicht* was better from the foot of the flag-staff; this, however, in the then state of the weather did not prove sufficient inducement for me to change my determination. After spending nearly an hour on the summit, we commenced our descent, by the old steps, with our faces to the slope. I led the way, and found that great caution was necessary, especially towards the lower end, as we approached the crevasse. Landing safely upon its edge, we crept along by our old friends the icicles, and ascending the snow-wall, we had but

to retrace our morning route (growling a good deal, by the by, at the ascent we had to make on leaving the corridor), till at 3.30 we rejoined Fleuri and Kennedy, whom we found seated in melancholy, not to say sulky, solitude, the one at the top of the couloirs, the other on the single rock that separates them."

The time had passed heavily, but when Hardy arrived, the high spirits of our successful companions proved contagious, and as they recounted their exploits with good humoured chaff the descent continued cheerily. It was enlivened by one or two animated discussions as to the correct route, and as every one had his own opinion upon the point, of course the worst one was selected; but it mattered not; we were not in the humour to be stopped, and it would have required an unusual obstacle to have turned aside those who had conquered and reconquered the "Festung." After one or two steep and rapid glissades, we reached the head of the glacier, and, entirely avoiding Boval, selected the right or eastern bank. According to Jenni's experience of the previous year, this line ought to have presented easy travelling; but since that time, an extraordinary change had taken place, so that after many fruitless attempts, now backwards, now forwards, now right, now left, we found the ice wholly impracticable, and were therefore compelled to take the centre. Here, however, we were once more bewildered with the extent and intricacies of the crevasses. Darkness was rapidly drawing on; we began to fear the chance of a night upon the glacier. Alexander and Jenni's brother rebelled against the authority of our chief, and counselled retreat, with the view of reaching the left bank at a higher point and thence forcing our way up the rocks to the ch^âlet of Boval. They urged the absolute impossibility of further advance down the glacier from the spot where we stood, and, by way of additional weight, threw in the consideration

that even the accommodation of the hut was preferable to night quarters upon the ice. If this course were to be adopted, there was not a moment to spare, for during our short consultation the evening gloom had perceptibly deepened.

Then it was that Jenni's resources and the determination of his character were conspicuously disclosed, while we — somewhat moodily contemplating a nasty-looking shingly ice-bridge which we had no desire to cross, unless it were absolutely necessary,— allowed him to get some distance ahead. Save those who have been placed in such positions of emergency, none know how hard a thing it is, after a long day of incessant toil and watchfulness to persevere, against opposition, in a right but difficult course. To adhere, through good report and through evil report, unflinchingly to the path of duty, to be not unduly elated by approbation, nor depressed one jot by censure — is an attainment to which all aspire. And surely it is not among the least of the merits of these our Alpine excursions that they inevitably call into action this noble quality of the mind: where hitherto absent, it is created; and where nature has already been lavish in her gifts, it becomes most highly developed. Dare any one say that Jenni's bright example shall be barren of good results? And who shall limit the beneficial effects thus produced? May we not believe that Jenni's conduct shall yield fruit, not merely unto those who were witnesses of it, but also unto many to whom the knowledge of it shall be brought? Not a thought did he give to the idea of retreat, except indeed when we forced it upon his notice, and then he treated the suggestion with the scorn it merited. "Onwards," was his word; "*Wir MÜSSEN vorwärts*," "We must forwards." There is something grand in the efforts made by this uneducated and unpolished son of the valley.

Having evinced considerable hesitation before venturing upon the ascent, when he has once determined upon it, he throws his whole soul into his task, he provides every possible requisite and he carries through the undertaking to a successful issue. Watch him! Nothing stops him; leaping wide chasms — winding with a slight balancing twist of the body across narrow bridges, cutting with a single swing of his axe a couple of steps in the steep side of a crevasse, accompanied with an upward spring and a jump down upon its opposite side, onwards he leads at a most rapid pace. He bids us follow and so indeed we do. He has at last cleverly obtained the clue to this intricate maze.

Night is rapidly closing in, and it seems doubtful whether, even with all the rapidity and decision of our guide, the glacier net-work will not prove triumphant, and hold us within its meshes until the morning light. One thing at least is evident — that had we turned back at the doubtful point, a night on the glacier would have been inevitable, as darkness would have overtaken us long before the bank had been attained. And now we are compelled to move more slowly; for the varied shades are most deceptive, and the nature of objects is almost undiscernible. We see a level space before us; it turns out to be a steep projection, and we stumble forward upon our shins. A dark spot offers a rocky foundation for the foot; it is a piece of shale at the bottom of an ice-pool, and we are up to the knees in water: but there is no time for thought, and we scarcely know whether the water is cold or hot. But "What is that ahead?" We can feel that Jenni smiles as he replies, "That is my beacon-light; I ordered it — it was wanted for the ascent. I promised to provide everything."

Another half hour, and we are off the glacier; the

beacon-light is dancing upon the welcoming faces of Jenni's friends, and upon the shining surface of the wine-bottles that they carry. Again Jenni's voice is heard — "These are my friends — this is my wine — I promised to provide everything." Is not Jenni a brick of a guide? And do we not all shake hands? And do we not heartily pledge each other as again, and again, and once again we quaff copious draughts of exhilarating nectar from the foaming goblet? There is but one trifling objection. There are no copious draughts, there is no exhilarating nectar, there is no foaming goblet. We must content ourselves with meagre tantalising sips of dull thin wine, out of diminutive india-rubber cups.

A quarter of an hour was agreeably spent in congratulations, and then, following the little foot-path, we soon found ourselves once more upon the high road. Here a carriage awaited us. Nothing loth, we quickly jumped into the car. It was a gorgeous contrivance, drawn by a white pony, with Jenni and his friend Walter seated on the low bar in front. We started at a good pace, but in ten minutes a boy made his appearance and told the driver to proceed slowly. The idea immediately struck us that some kind of ovation was in preparation. This idea was confirmed when Jenni produced two brilliant bunches of artificial flowers tied with flowing white ribbons, which he proceeded to fasten upon our hats. It was Jenni's carriage; they were Jenni's ribbons. He promised to provide everything. In five minutes Herr Saratz, the President of the Republic of the Ober-Engadin, and his brother greeted us, one on each side of the carriage, and presenting us each with a bouquet of fresh flowers, congratulated us upon being the first strangers who had made the ascent of the Pizzo Bernina.

The whole population had turned out to meet us. They

fell in behind the carriage, and then passing in single file on each side it, every man raised his hat and saluted. As we neared the village of Pontresina the carriage stopped before a huge bonfire, and the band played "God save the Queen." Hardy and I felt that our triumphal entry was wholly undeserved, and were quite unable to express our sense of the kind feelings that had suggested it. All that we could do was, with a bouquet in one hand and a decorated hat in the other, perpetually bow to the assembled multitude. We afterwards ascertained that it was to the kind consideration of Herr Saratz that we were indebted for the ovation.

Proceeding slowly onwards, with the band in front playing lively airs, we at length reached our hotel. Here the crowd became thicker, for every one seemed envious to congratulate and shake hands with the Englishmen.

A capital supper was ready. We invited the guides to partake. The band played cheerily during the meal. We pledged one another in the sparkling wine; and as we recalled the incidents of the day, and dwelt upon the difficulties that, in mutual trust and with mutual aid, we had together overcome, we felt that a kindly feeling had been established. Hardy and I will always look back with satisfaction upon the excursion, and our three guides will never regret the day on which, with so much skill and determination, they assisted the two Englishmen to scale the heights of the Pizzo Bernina.

NOTE 1.

(From "Sinai and Palestine," by Arthur Penrhyn Stanley, D. D.)

"It appears that in the ninth and tenth centuries, the valley of Saas was occupied by a band of Saracens; and M. Engelhardt* ingeniously, though in one or two instances fancifully, derives the existing names of the localities in that valley from these strange occupants. Amongst these are the *Monte Moro*—'Pass of the Moors'—the two villages or stations of *Almagal*, and the mountain of *Mischebel*; of which the former, by the likeness of its first syllable to the Arabian article *al*—the latter, of its termination to the word *gebel*, certainly confirm the hypothesis. But the most curious and the most probable is the name of the huge glacier through which rushes the wild torrent of the Visp. Hardly two objects less like can be conceived than that mass of ice, with its lake reflecting the glaciers in the tranquil water, and the abundant stream gushing from its bosom, on the one hand; and on the other hand, the scanty rivulet or pool in the rocky bed of the desert, fringed with palm or acacia. But this was the only image which the Arabs had of a *source* or *spring* of a river. And 'Al-al-'Ain,' accordingly, is the present name of the glacier of their Alpine valley."

NOTE 2.

The Pizzo Bernina was first ascended by the geometrician Herr J. Coaz, of Chur, on September 13th, 1850. He left the inn on the Bernina pass at 6 A.M., got on to the Morteratsch glacier near its terminal moraine, and walked up its centre. He was delayed by the crevassed state of the upper portion of the glacier, and did not reach the summit until 6 P.M. Although so late, he remained there, building a stone man and enjoying the beauties of the sunset. It was dusk before the descent was begun; but,

* "Valleys of Monte Rosa."

favoured by the moon, the party persevered, and finally reached the inn at 2 A.M. All weariness from the ascent was speedily forgotten in a glass of old Veltiner, and nought remained save memory's inextinguishable charm.

The next and only other ascent was made by Herr Saratz, the President of the Ober-Engadin. From youth he has been a lover of the mountain-world, a hunter of the chamois and the bouquetin, and a keen explorer of these inmost recesses where nature is seen in her greatest beauty. He longed to try that venture which Coaz had achieved. Accordingly, at 3 A.M. on October 2nd, 1858, he left the Bernina inn, taking but a small store of provisions, but not neglecting rope, axe, and other mountain requisites. He reached the head of the lateral valley that descends from the Pers glacier to the Bernina pass, at 6. He then took to the ice, and, passing the Festung, gained the ice-shed at the head of the Morteratsch glacier at 11. He reached the summit at 3 P.M., and, after remaining there an hour, commenced a rapid descent which brought him to the Bernina inn at 10 P.M.

FLORA OF THE OBER-ENGADIN.

1. *Samaden.*

Viola pinnata.
Cirsium eriophorum.
Saussurea alpina.
Cerinthe alpina.

Androsace septentrionalis.
Salix pentandra.
Scirpus alpinus.

2. *Samaden Alp.*

Ranunculus pyrenæus.
 parnassifolius.
Draba frigida.
 Johannia.
Dianthus glacialis.
Arenaria biflora.
Phaca frigida.
 alpina.
 australis.

Potentilla frigida.
 nivea.
Saxifraga stenopetala.
 planifolia.
 controversa.
Eritrichium nanum.
Aretia helvetica.
Chamaeorchis alpina.
Avena subspicata.

3. *Celerina.*

Epilobium Fleischeri.
Phyteuma Scheuchzeri.

Allium strictum.
Carex bicolor.

4. *Celerina Alp.*

Oxytropis lapponica.
 Hieracium alpinum.
 Gentiana lutea.

Gentiana punctata.
 Salix glauca.

5. *St. Moritz.*

Geranium aconitifolium.

Lianæ borealis.

6. *Pontresina Alp.*

Aquilegia alpina.
 Achillea nana.
 Sempervivum Wulfenii.
 Senecio carniolicus.

Pedicularis incarnata.
 Primula latifolia.
 Allium Victorialis.
 Sesleria disticha.

7. *Slopes of Piz Languard.*

Ranunculus glacialis.
 Cerastium glaciale.

Androsace glacialis.
 Carex Vahlil.

8. *Near Top of Piz Languard.*

Gentiana bavarica.
 glacialis.

Poa minor.

9. *Bernina Pass.*

Lychnis alpina.
 Cerastium latifolium.
 Sedum villosum.
 Achillea moschata.
 Phyteuma humile.
 Gentiana brachyphylla.
 Polemonium cæruleum.
 Pedicularis atrorubens.

Lloydia serotina.
 Tofieldia borealis.
 Juncus Jacquini.
 trifidus.
 Eriophorum Scheuchzeri.
 Elyna spicata.
 Avena versicolor.

10. *Valley of Rosegg.*

Astrantia minor.
 Bupleurum stellatum.
 Gnaphalium supinum.
 carpathicum.

Gentiana Charpentieri.
 tenella.
 Dracocephalum Buyschianum.

11. *Cambrena Glacier.*

Papaver alpinum.
 Alsine recurvum.

Genm reptans.

12. *Piz Rosatsch.*

Saxifraga Seguieri.
 Saussurea alpina.
 Phyteuma pauciflorum.

Primula latifolia.
 Androsace glacialis.
 Aretia glacialis.

Many of these specimens are not confined to the particular locality under the name of which they are included.

CHAPTER III.

THE CHAMOUNIX DISTRICT.



1. THE PASSAGES OF THE GLACIER DU TOUR AND OF THE COL DE MIAGE.
2. NARRATIVE OF THE ACCIDENT ON THE COL DE MIAGE.

1. THE PASSAGES OF THE GLACIER DU TOUR AND OF
THE COL DE MIAGE; OR, A DAY IN A HEALTH-TRIP
TO THE GLACIERS.

By J. G. DODSON, M.P.

EVERY now and then there appears a disposition among certain persons at home to decry those expeditions to the "High Alps," which have become so much the fashion of late years. In the dull season of the year newspaper writers or correspondents, for want of something better to attack, set to work to write down the Alps or the Pyrenees. Ascents of peaks and passages of cols, unless excused by some distinct scientific purpose, are pronounced to be rash and profitless. As a matter of fact, it is not questioned that such adventures are numerous and accidents rare; but, say the wise utilitarians, why run any chance at all of rolling over the edge of a cliff or vanishing down a crevasse? Cui bono? Still, if that were all —

"I demens, et sævas curre per Alpes,
Ut pueris placeas, et declamatio fias."

"Break your own neck, if you choose,—be a nine days' wonder, and perhaps arrive at the distinction of a leading article on your death and your folly; but," adds the moralist, "you are worse than foolish if you selfishly tempt poor peasants with your gold to expose their lives to gratify your recklessness or your vanity. Notwithstanding all this excellent advice, Alpine excursions, undertaken with due precaution, and under proper guidance, are not

on the average attended with greater danger than other amusements involving physical exertion and the excitement attendant on difficulty or risk, when these are encountered and overcome by skill and activity. Nor is the profession of a guide more hazardous than that of many who in other ways minister to the sports and recreations of English gentlemen. Alpine perils there no doubt are,—let there be no mistake nor illusion on this head,—and these are no more to be despised or trifled with, particularly by the inexperienced, than are the dangers of the ocean. Winds and waves, rocks and shoals, however, are not held as furnishing sufficient reasons for consigning a yachtsman to Bedlam. The use of Alpine expeditions is of similar character with that of a run across a stiff country,—of a cruise at sea,—of a hard day on the moors,—or of many other exercises in which Englishmen indulge unrebuked. It braces the muscles, steadies the nerve, gives readiness to eye, hand, and foot, and fresh health and vigour to the whole frame. All, however, in a higher degree. Neither the breeze of the Atlantic, nor the clear air of the desert, nor the bracing atmosphere of Scotch hills or English downs, can vie for one instant with the inspiring, life-giving breath of the glacier. I speak from experience. I had been a good deal out of health, and not a little out of spirits, for two years. I had tried hard work,—I had tried relaxation from all work,—I had tried hygiene, orthodox medicine, and heretical cures. Nothing would do. In the autumn of 1859 I was persuaded to try Switzerland. It did not cure me, but it effected much. Before I left England it was pain and grief to crawl up a Malvern hill. Before I had been six weeks in Switzerland I made the ascent of Mont Blanc, and enjoyed it thoroughly.

On the 5th of September, 1859, we started from M. Eisenkramer's excellent hotel, the Union, at Chamounix,

intending to make a tour of Mont Blanc, and return by the Col de Miage. Our party consisted of three Englishmen and three guides. The English were Mr. George Sackville Lane Fox, the Rev. T. W. O. Hallward, and myself. The guides were François Cachat, François Couttet (Baguette), and Peter Bohren of Grindelwald. Fox had the preceding year made several *grandes courses* (including successful ascents of Mont Blanc and Monte Rosa), accompanied by the faithful Bohren. He had this season already crossed the Strahleck and other Oberland passes. Cachat had attended Mr. Wills over the Glacier du Tour, as those who have studied the transactions of the Alpine Club may remember. Lastly, Couttet, surnamed Baguette from his ramrod legs, and to distinguish him from another François of the same name, had explored one side of the Col de Miage with Mr. Coleman in 1858. Three better or more trustworthy guides could not easily be found.

We stayed the first night on the little inn on the Col de Balme, and proceeded next day by the Glacier du Tour to Orsières. When we left our sleeping-quarters the dawn was close and murky. It was somewhat dreary work crawling and clambering between light and dark over rocks slippery with the early frost. We reached the glacier, and plodded on over a wilderness of snow, dim, trackless, noiseless. So weird and unearthly was the scene, so congenial a haunt for spirits, that it would not have been startling,—nay, one almost expected at any moment to become aware of white-sheeted phantoms gliding beside or across one's path. After a while the sun dispelled the leaden-coloured mist, and then—

“ The bright beams of frosty morning danced
Along the spangled snow.”

As the sun rose higher, not only the early mist, but the

very atmosphere itself, seemed to disperse and disappear, while a flood of light poured down from above, and was reflected with such intense brilliancy, that the glaring snow-plain we trod on became as dazzling as the god of day himself. The only relief to the eye was afforded by the rich ochre of the truly "Golden Needles." They rose towering from the snow around, some shining in naked purity, others clad in mantles of glittering frost and encircled with coronets of sparkling diamonds, each different in form from the other, each varying from itself as the point of view was shifted, yet all alike bold and graceful; obelisks and pyramids such as no Pharaoh ever reared, pinnacles and spires such as no temple built with hands ever boasted.

Why the Tour is not a more frequented route I am at a loss to conceive. It is not difficult, and certainly is of surpassing beauty. The rolling fields of snow abound in crevasses; but as we were all harnessed with ropes they only afforded matter for merriment, as now one, now another of the party, blundering and floundering through the treacherous footing, had to be pulled up with a jerk, like some foundered screw. To the view from the summit no pen, not even Mr. Wills's, can do justice. It must be seen.

We followed generally the direction previously taken by Professor Forbes and Mr. Wills, till we reached the Fenêtre. Out of this we looked down upon the magnificent Glacier de Salena: then, wishing to take the shortest and easiest course to Orsières, we turned back from the Fenêtre, and, bearing N.E., crossed the Glacier d'Orny diagonally. On our way Bohren's keen eye detected the fresh track of a chamois: the animal itself we looked for in vain. Having reached the left or northern side of the glacier we skirted it, till, taking leave of the ice, we came

upon a rugged path among rocks. Presently we arrived at a little shrine where some peasants were offering up prayers for rain. Fortunately for us they did not prevail with their patron saint that day. Our road became gradually smoother, and after some windings led us directly down to the miserable little town of Orsières, our appointed halting-place for the night.

The following day we proceeded leisurely by the Petit Ferrex to Courmayeur, where we spent a couple of days in making the ascent of the Cramont and other minor expeditions. At least Hallward and I did. Poor Fox, fired with ambition to ascend the almost virgin Aiguille du Midi, left us before reaching Courmayeur, and, taking all three guides with him, went to sleep at the pavilion on Mount Fréty. The summit of the Aiguille had only been once reached, and that by a French count, several years ago. In the windows of the stationers or of the "general notion" shops at Chamounix may be seen a print entitled *Escalade du dernier rocher*, in which Count Ferdinand and his men are represented crossing an impassable gulf on an impossible ladder preparatory to walking up an impracticable cliff. Envious rumour, indeed, whispers that the Count only ascended by proxy,—that he sat down on a ledge some way short of the summit, and deputed his guides to plant his *drapeau* on that crowning height. Let it, however, be understood that it is rumour says all this, not I. Certain it is that on the afternoon of the following day Fox returned in triumph, having uprooted the Frenchman's flagstaff, of which he brought home the stump in his pocket, together with a fragment of the topmost peak. His own flag hoisted on Cachat's bâton he left flying, and this we afterwards had the satisfaction of seeing from Chamounix.

We rose at one o'clock on Saturday morning, the 10th

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of September; and after breakfasting with what appetite we might at that hour, started from Courmayeur at 2 A.M. Our guides estimated that we might reach Chamounix in thirteen or fourteen hours. As, however, none of them knew anything of the ground on this side of the summit of the Col de Miage, and Couttet had only once been over the remaining portion of the route, it was thought prudent to allow an ample margin of daylight.

We picked our way over the rugged pavement and through the dark and silent streets of Courmayeur by the feeble light of a lantern; and followed the same glow-worm spark up the valley and along the Allée Blanche which looked black enough for anything. A dark night march, whether on foot or on horseback, is always a dreary, weary affair; and this one proved no exception. We walked on between awake and asleep in Indian file, each man instinctively or mechanically treading in the footsteps of the one before him. I indistinctly remember plodding over a stony beach, crossing and recrossing a little stream which there appeared no getting rid of; the oftener one crossed it the oftener one had to recross it. I was beginning to ask myself whether it were not all a nightmare, when I was roused by the voices of the guides who were making night hideous with their discord. My first fear was that some feud had broken out between our Oberland friend and the men of Chamounix. The dispute, however, was with a short stumpy porter from Courmayeur, who, in consideration of the guides being loaded with an extra quantity of provisions, had been engaged as a beast of burden to carry some of the knapsacks. We were approaching the huge moraine of the Glacier de Miage when the porter, thinking we were far from help, and therefore at his mercy, struck for a rise of 100 per cent. in his wages. In vain was he charged with

breach of faith,—in vain were Courmayeur men in general, and he in particular, taunted with being cowards before ice. The short porter was obstinate. Now, no Englishman can brook being beaten by a foreigner. Accordingly, meeting his obstinacy with more obstinacy, we told him without waste of time that his services could be dispensed with; and although he then began to propose terms of capitulation, these were not admitted. The knapsacks and haversacs were torn from him, and he was ignominiously dismissed grumbling, having had a night's work in carrying our things, and receiving for his reward a round abuse in French, English, German, Italian, and in various permutations and combinations of those languages. We had to smart, though, for our victory; for as we could not add to the baggage already put upon our guides, we had to divide the porter's load among ourselves, and found by experience how much a knapsack or a haversac, even a light one, adds to the heat and burden of the day.

It was now dawn, and as the light broke we all brisked up, and the day's work appeared to begin. All that had gone before,—the getting up in the dark, the candlelight breakfast, the night-walk, even the dispute with the short porter,—seemed to have belonged to some former day, and to have had no connection with the present.

We clambered up and passed over the terminal moraine,—the bar at the mouth of the great ice-river,—which, already extending for miles, threatens to block up the valley. We then came upon the Glacier de Miage itself. Our course lay plain and even before us to the foot of the col,—or at least to all appearance so. If we rose as we proceeded,—and I suppose that glaciers no more than streams “meander level with their founts,” in spite of Mr. Mont-

gomery,—the rise was gradual and almost insensible. Numerous crevasses intersected our path; but none offered any serious obstacle, and we advanced as rapidly and independently as if on an excursion to the Jardin. The air was fresh and cool, and there was no glare from the snow; as Mont Blanc, high on our right, kept the sun off us for hours after he was shining on other mortals. We only paused now and then for a few moments to peer down into the blue depths of a crevasse of more than usual beauty, or when the hunter Bohren, always all eyes for a chamois alive or dead, pointed out the skeleton of one of these creatures embedded in the ice.

On each side, to the height of several thousand feet, sprang sheer precipices, forming the banks of the frozen stream we were ascending. Their hoary sides were streaked with torrents of ice,—the feeders and tributaries of the great Miage. These mighty cliffs the glacier, in its awful strength, gnaws and eats away, as the Nile or the Mississippi wear down their soft alluvial banks, and carries down, as its silt, no mere particles of mud and sand, but vast boulders and fragments of friable rock.

Before us, to all appearance as inaccessible as any of the precipices on the side, though less in height, rose the col, in the shape of a crescent, with the horns pointed towards us. From its summit descended a snowy cataract, the foot of which appeared one vast chaos of crevasses, séracs, and ice-blocks. It was a very horse-shoe fall, save that its every feature—the headlong torrent—the watery abyss into which it plunges—the foaming surges and the flashing spray around,—all had been suddenly struck motionless, and, as if by the action of some Gorgon's head, turned into a solid mass. No wonder De Saussure, looking up at it from some distance, pronounced this to be an impassable barrier. Far again above col and cliff

towered up into the cold clear atmosphere, with sharply-cut outline, many a snow-clad peak, and high above all the calotte, crowning Mont Blanc. Looking round upon the walls of rock and ice that encompassed us, one was reminded of Sindbad in the valley of diamonds, and thought nothing save a rokh could extricate one from this depth. I do not think I ever saw a scene more wild, more desolate, more impressive. No life, no sound, no motion, not even a breath of air stirred. It was a realm —

“ Where matter dared not vegetate nor live,
But ceaseless frost round the vast solitude
Bound its broad zone of silence.”

Yet stay; something has just moved, for high up from the cliffs on our left proceeds a gentle rattling sound. Bohren declared it must be a chamois, whose cautious tread had not prevented his attracting attention by setting some loose stones rolling. We scanned the rocks in vain for chamois, but as we looked up we saw the summits of the hills on the west edged with brilliant light. The sun has just reached them, and, melting the ice in their topmost couloirs, set free the stones which the hand of frost had hitherto held fast, but which now ran merrily rolling and bounding down their grooved sides. This was a hint to us that we had better hasten on and accomplish as much of our ascent as we could before the batteries of the couloirs should open fire in earnest. Still it was absolutely necessary to breakfast. We were now nearing the foot of the col, and a large flat stone resting on the ice, of convenient height and dimensions, offered itself in the double capacity at once of seat and of table. Half an hour's halt was therefore called.

It was now 6.30 A.M.; knapsacks were unstrapped and yielded up their stores of cold beef, cold fowls, hard boiled

eggs, German sausage, and bread, besides sundry bottles of red wine. Not thin sour vinegar, such as that by the aid of which Hannibal severed rocks and burst through the Alps, but canonised beverages,—St. Jean and St. George,—rivals in body and in spirit. No better provision can be carried on these expeditions than the sausage, which, if we had it in England, we should, for want of a better name, I suppose, call German. It is food compact, portable, pleasant withal, and stands by one on a long day better than anything I know. It involves no trouble nor loss of time in carving. With any knife you can in a moment lop off a foot or a yard according to your appetite. Its only fault, perhaps, is that it somewhat provokes thirst.

Punctually at the expiration of the prescribed half-hour we lighted cigars and set off. During intervals at breakfast the barricade we had to surmount was examined through a glass, and the most promising line decided on. Fox pronounced that we should reach the top at 9 A.M.; the guides more prudently said 10 A.M. We now encountered a rapidly ascending slope in some parts at the inclination of half a right angle. Our course was, moreover, rendered intricate by numberless crevasses, around, among, and across which we had to work. At one of these a serious accident was near befalling one of the party.

Fox was leading the way armed with his hatchet; immediately on his right was an upward slope of ice, so steep that I have seen many a wall further removed from the perpendicular. Presently he found his path intercepted by a yawning crevasse, fathomless as ocean. There was no apparent way of circumventing this, and Fox proceeded steadily, cutting steps in the icy slope, which here, receding from the chasm, became less inclined. He had advanced some distance over the gulf, and I was already standing on the first steps he had made, when suddenly I saw his feet

go out as if they had been struck away from under him ; he slithered down the polished surface of the gulley, like a tree down a timber shoot, and disappeared in the jaws of the crevasse. A thrill ran through me as I saw him go ; but in another instant I was relieved, when, craning down as well as I could, I caught sight of his hat and an arm, stationary, at a depth of not more than twelve or fifteen feet. Providentially he had lighted astride of a projecting piece of ice, which brought him up, and by instantly striking the pick of his axe into the wall of the crevasse steadied himself in that position : the guides, cautiously approaching the edge, threw him a rope, and he was drawn up none the worse for his slip. After this warning, however, we took further precautions. Bohren, round whose short person so many fathoms of rope were coiled that he looked like a walking capstan, was unwound, and we were put into harness, with Cachat as leader. The ascent became steeper and steeper, and the axe was in constant request. The sun, too, was now high, and the couloirs above kept up a frequent though desultory fire of stones ; but the crevasses, lying transversely before us, did good service by swallowing up these missiles before they could reach us. Couloirs, I should explain for the benefit of the uninitiated, are furrows or channels lined with ice or frozen snow, running down the sides or slopes of mountains, and along which any object, once started, shoots with incredible force and velocity. After a while, the ice becoming impracticable, it was judged best to bear to the left and get on to the rocks. This was accomplished with some difficulty, and now came a scramble almost straight up, by the aid of hands, knees, and feet,—now tugging each other up with rope ends,—now hoisting a friend on high with the butt end of an alpenstock, or drawing one's self up by the pick of an axe. The crags were composed of thin vertical layers,

fissile and crumbling, bearing out De Saussure's description, — "*des assemblages de feuillets pyramidaux extrêmement aigus*:" the projecting layers afforded the hold for the foot or the grasp for the hand, which enabled one to clamber up; but the sharp edges cut the glove with which one seized them to shreds, or the fragment on which one rested for a spring upwards came treacherously off in one's hand or failed under one's foot. The col was quite unknown to the guides; and consequently here on the rocks, as before on the ice, we were frequently brought up by an impracticable place, and retracing our steps, were now and then compelled even to turn off the arête and hew our way for a while up or across a couloir.

Nine o'clock had come and gone, ten o'clock was long past, and the summit was still far off. The sun was hot, rock and snow glaring; and the knapsacks that horrible Courmayeur porter had bequeathed to us had become woefully cumbersome. We were feeling that raging thirst for inspiring which the High Alps can compete with the deserts of Mesopotamia. All the oranges, all the apples, were gone long ago; snow in the mouth brought no relief; we must have some wine, we said to Cachat, as we paused with him to take breath at the foot of a vertical wall of rock, leaving Bohren and Couttet to go ahead and look out for a road. Cachat produced the last bottle from his store, which I put to my mouth, fondly expecting a good draught of St. Jean. It was strong luscious Muscat, one bottle of which our host had insisted on our taking, tepid with the heat of the sun and with being churned in a havresac: for all that, we drank it down like so much water, but it afforded little relief to one's thirst. I looked at the ridge far above me, and bethought me of the bitter wish expressed shortly before concerning Mont Blanc by a gentleman toiling up it and in the agony of sinking into deep

snow at every step,—“ You infernal mountain, I should like to have you rolled out and sown over with potatoes ! ” A yell from Peter some fifty feet above, admonishing us to take the rock to the left, put an end to reflections.

At length, after more struggling and clambering rock work, we found ourselves really near the top of the ridge ; the séracs and precipices of ice that we had avoided by taking to the crags, lay below us, and immediately to our right stretched a small inclined plateau, covered with snow, leading to the summit. Of this plateau and its crevasses we knew nothing ; but it looked tempting, so we tied ourselves all together, like camels in a string, and with some difficulty got on to it. Crevasses were not wanting, but we were fortunate in hitting off bridges under the snow ; in one instance, if not more, they let the hindmost of the party through, but the rope made all safe ; the snow was in fair condition, and in twenty minutes from leaving the rocks the height was won. We looked at our watches ; it was just twelve o'clock.

The ridge on which we stood was about the width of an ordinary footpath. For all one could see, it went down sheer and perpendicular on the north side. But for this isthmus the range of Mont Blanc would here be completely broken through. To those who have seen the Devil's Dyke, near Brighton, I may perhaps convey some idea of the form of the deep channel scooped out by the southern glacier and closed by the precipitous col at its head, when I say that it resembles, on a gigantic scale, the ravine which so nearly divides the South Downs. The fiend, so runs the legend, had undertaken to cut through the chain of hills, and let in the sea to flood the Weald of Sussex ; but seeing an old woman's lantern, and mistaking it for the rising sun, he became alarmed, and, hastily abandoning his task, left unremoved the escarped bank, which, extend-

ing across his unfinished trench, still maintains the continuity of the Downs, and thus preserves from a watery grave the peasantry of the plain.

The view which burst upon us as we gained the summit was more extensive, but less wild, than that behind. At our feet lay the northern Glacier de Miage, bounded on each side, like its southern namesake, by precipitous faces of rock, scored by avalanches and torrents, but terminating in green slopes and a grassy valley beyond. In the blue distance lay the Jura mountains, and, I believe, the Lake of Geneva. The col itself forms a causeway connecting the Aiguille de Miage and other heights on the west with the Aiguille de Bionnassay and the peaks adjoining Mont Blanc on the east. From the angle formed by the junction of the col with the rocky slopes leading up to these last poured down a glacier, the effect of which we discovered later in the day. From the opposite angle made by the col with the Aiguille de Miage, avalanches came roaring and rushing down, apparently with the undeviating regularity of excursion trains, at intervals of a quarter of an hour or twenty minutes. Looking back to the south we could see nothing but the long glacier we had walked over, scored transversely with crevasses, streaked longitudinally with moraines, and the crags that hemmed it in on every side. Seen in the early morning, as we stood far below them, the snow-capped summits of Mont Blanc and of his rivals affected one with a chilling sense of gloom. There was something so cold, so lifeless about them; they seemed like death's heads placed aloft in a sphere above human feelings, interests, and passions. Now they inspired no idea of sadness,—they glowed warmly in the brilliant light that suffused them; the distance between them and us was reduced; they seemed no longer so far removed from earthly ties and sympathies; and one felt that if one

did not admire them less, one loved them more, and hoped for a still closer friendship. All homage, however, to the monarch who is seen from here, as everywhere, throned high above the rest,—the very emblem of majesty and repose. Mr. Ruskin has an expression to the effect that mountains, besides the material duties of forming reservoirs of water and purifying the atmosphere, have the higher mission of elevating and ennobling the human mind. Mr. Buckle, on the contrary, tells us that mountains crush and degrade the intellect of man, and quotes in confirmation of his assertion a passage from Alison, the purport of which is, that mountain scenery has made the Tyrolese ignorant and superstitious. Whether our party were more ennobled or degraded by the scenes around us I will not undertake to say. Neither effect, however, was produced to such a degree as to put out of sight the matter-of-fact view of the case,—that the day was far spent, that a long steep descent was before us, and that, as nothing insures a steady head so well as a full stomach, it was advisable to dine without delay. Accordingly half an hour was devoted to recruiting our forces. At 12.40 time was called; we left our names in a bottle deposited on the top and girded up our loins. The cellar being now quite exhausted, and the larder almost so, the original load was thus materially reduced, and the guides were able to relieve us of our burdens. Baguette proceeded along the edge of the col in the direction of Mont Blanc, craning down and endeavouring to hit off the arête by which he had ascended and descended with Mr. Coleman the year before. There was some difficulty in finding the direction, and we began to think after all we should have to strike out a line for ourselves. Not that it seemed much to signify where one went, for to all appearance one might have dropped a plummet at any point. Just now, however, Couttet

exclaimed, "Here it is!" and plunged downwards. The rest followed.

The descent was almost entirely rock-work, by crags of the same character as those we had struggled up on the other side, with an occasional patch of ice or snow to give variety and relief. The first portion was decidedly fitter for quadrumana to climb than for bipeds to walk down. Great and not unreasonable were the exhortations addressed to the rear ranks by those in front not to send the loose crumbling masses of stone rolling on their heads. Towards the bottom there was more slope, the foothold improved, and one could dispense with the aid of hands and rely on one's feet and one's alpenstock. We looked in vain for chamois all day, though both Miages are their favourite haunts; and Couttet had in 1858 seen a herd of thirty or forty on the crags overhanging the northern glacier. Bohren was obliged to console himself by occasionally detaching some huge fragment of rock and sending it bounding down the dizzy steep till it was dashed to atoms on the glacier below, or swallowed up in one of its gaping chasms. Such a proceeding, particularly at critical points, is not encouraging; but Peter may have intended to convey a warning, indicating, more delicately than words could do, to his *Herrschaften* how they would go and where they would go if they did happen to make a mistake. When we reached the bottom we found that the glacier before mentioned as coming down from the east end of the ridge above, created by its junction with the main stream, a sort of storm in the ice, which resulted in many large crevasses, more especially in one which effectually barred our passage on to the level plain before us. Eastward the prospect was hopeless: we, therefore, skirted the crevasse for some way, going westward, till we found ourselves brought up by a wide couloir, which, as

the occasional discharge of a stone showed, was not altogether inactive. After a little deliberation it was decided that it must be crossed, though the operation was of the kind our guides most objected to; and justly so, for against stones shooting down a groove of ice with something of the force of a rifle ball, presence of mind, skill, and activity avail but little. Especially awkward is it for the man who has to make the way, and stand fire while cutting the steps. This duty Cachat took upon himself; nor was he long about it: his axe was soon ringing upon the ice, and scattering a shower of gems at every blow; till, by an incredibly small number of well-directed strokes, a succession of ledges was made, by aid of which we hurried across. As we passed over one of the party naïvely remarked that after all a couloir was the same as a brook, with this difference, that in a brook the water rolls over the stones, and in a couloir the stones roll over the water. Still the crevasse baffled us; it was either too wide to jump, or, if it seemed to come up to the rocks, a few soundings taken with a pole, so far as a pole could reach, proved there was no bridge, or none that would bear. The adventurous Bohren was out of all patience; he had, with magnanimous self-denial throughout the day, waived all pretensions to the post of honour and of danger in favour of the Chamounix men, on whose manor he was to a certain extent a trespasser. Muttering German reflections, rather disparaging to the courage of all but Oberland guides, he now rushed to the front, and looked with scrutinising eye at some snow that approached the rocks. It was too far below to be probed with an alpen-stock; and, notwithstanding remonstrances from guides and travellers, he jumped upon it. He rolled over in the soft snow; but there was a firm substratum; and the problem of getting on to the glacier was solved.

This northern was the counterpart of the southern Miage, though less extensive. We crossed it diagonally, bearing towards its eastern side. Then came an enormous moraine that would not have disgraced the grinding and carrying powers of the larger glacier; and eventually we landed on a succession of grassy terraces covered with bilberries. After so many hours of rock and ice we thought walking on grass would be no exertion. These slopes proved, however, very steep and slippery, to a degree that appears peculiar to Alpine grass. Altogether this was the most wearisome part of the day. We missed our way, too, by following the bed of a tiny rivulet which led us astray. After the moist green hills and banks came a stony tract like the sea-beach, and having crossed this we arrived about 5 P.M. at some *châlets*, called the *Châlets de Miage*. Lying down on the fresh sod we drank some milk and finished whatever remains of food were to be found in the *havresacs*. Turning back towards the col from a distance it looked simply perpendicular, and showed no signs of being anywhere practicable: the valley seemed completely walled up by it. At the expiration of twenty minutes the party jumped up quite refreshed, and we set off for Chamounix, reckoned to be about fifteen English miles distant. In England the walk we had still before us would be considered a good day's exercise. But in the Alpine world innate or acquired ideas of time and space are totally revolutionised.

The path for some time wound up and round the side of a lofty hill. To ascend, after so many hours of incessant descending, was a pleasing change. It felt actually more refreshing and invigorating to the muscles than the repose by the *châlets*. We pushed briskly on over the first hill down into a deep valley over the Col de Voza, and thus onward over hill and dale. Walking over such

ground seemed to require no effort, and with the cool of the evening every vestige of fatigue vanished. Then came the summit of the hills forming the southern boundary of the valley of the Arve. In tearing spirits, and with many exhortations to Peter Bohren to take care of himself on such dangerous ground, we raced down the slopes and terraces, coming down with a run into the dusty road a little below Les Ouches. At this village some of the party halted for tea. The rest kept straight on, and reached Chamounix a few minutes before nine; the second division came in about twenty minutes later. We had therefore taken, including halts, nineteen hours to accomplish our journey.

A hot bath, a glass of Vermuth, a supper which a Sybarite might have envied, but never could have equally appreciated, in the company of our trusty guides, fitly concluded one of the most enjoyable days of a health-trip to the glaciers.

It is impossible satisfactorily to take leave of the Col de Miage without alluding to the unfortunate accident, of which, since our passage, it has been the scene.

We little thought that two years later, a young traveller would be disastrously separated from his friends on that identical Col, whence we had so thoroughly enjoyed the wondrous scenery. We dreamed not that it would be his lot to be dashed from top to bottom of one of those fearful couloirs of ice, down which we had gazed with "bated breath."

A description of this accident will doubtless be acceptable to all interested in Alpine adventure, and no one is more capable of accurately narrating the facts than the Rev. Charles Hudson, who was a kind and constant attendant upon the sufferer.

2. NARRATIVE OF THE ACCIDENT ON THE COL DE MIAGE.

BY THE REV. CHARLES HUDSON, M.A.

ON the 10th of July, 1861, we set out from Chamounix, with the object of ascending the Col de Miage, to try if there were a passage at the back of the Aiguille de Bionassay by which Mont Blanc could be ascended. Our party consisted of the Rev. Leslie Stephen, Messrs. Tuckett, Frank Mather, John Birkbeck, and myself. For the information of those who read this account, I may mention that John Birkbeck formed one of this party in compliance with his father's distinct wish. To my inquiry as to what mountains he should attempt, the reply was, "Mont Blanc, and other high mountains, if you think him fit for the fatigue." After trying him in several smaller expeditions, I was quite satisfied of his powers as regards strength, good head, and sure foot.

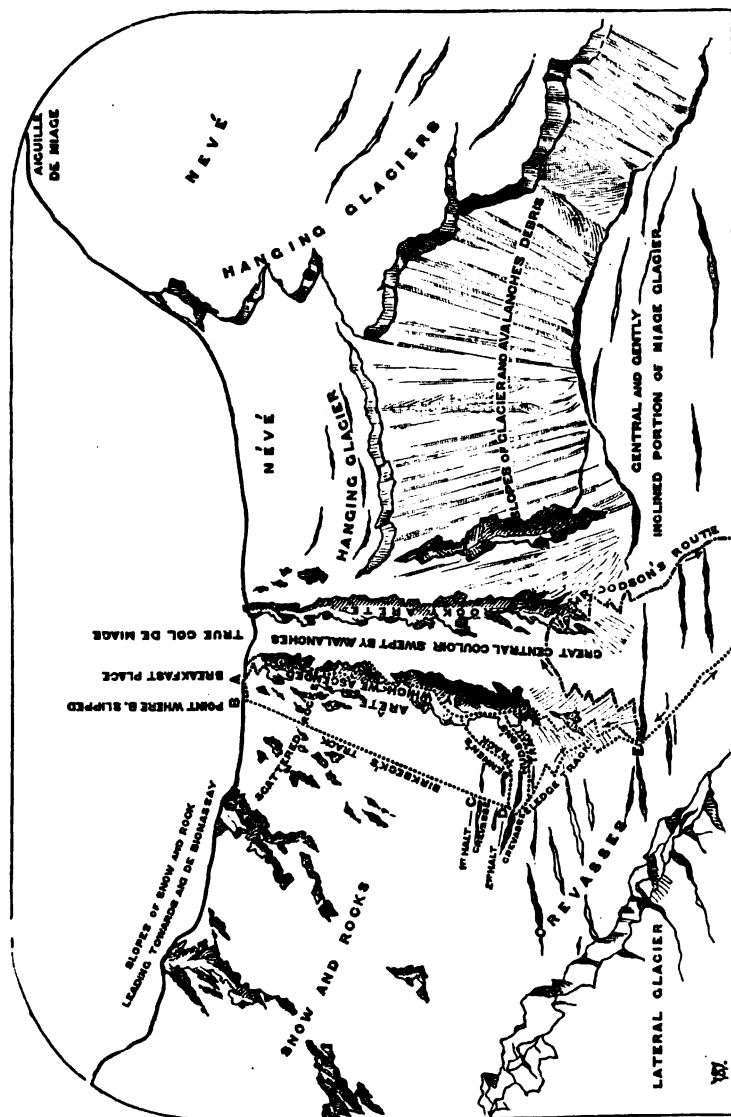
On the afternoon of the 10th of July we set out from Contamines, the second stage of our expedition, and progressed without adventure till our bivouac. On the morning of the 11th, at 3.30, we left the friendly rock on, or near which we had passed the night; and at seven o'clock we had reached the summit of the Col de Miage. Here we sat down on a smooth hard plain of snow, and had our second breakfast. Shortly afterwards Birkbeck had occasion to leave us for a few minutes, though his departure was not remarked at the time. When we discovered his absence, Melchior followed his

footsteps, and I went after him, and, to our dismay, we saw the tracks led to the edge of the ice-slope, and then suddenly stopped. The conclusion was patent at a glance. I was fastening two ropes together, and Melchior had already bound one end round his chest, with a view to approach, or even descend a portion of the slope, for a better view, when some of the party descried Birkbeck a long way below us. He had fallen an immense distance.

It has been asked how the different guides conducted themselves, and which of the travellers went to Birkbeck? I shall consequently mention one or two facts which otherwise might have been passed over in silence. The German guides gave vent to frequent bursts of tears, not only at the moment when we discovered our friend's terrible fall, but from time to time during the day. The two guides from the neighbourhood of St. Gervais gave no outward manifestation of feeling, though their state was sufficiently indicated by their reply to me, when I made some suggestion before leaving the Col, "*Nous sommes des incapables.*" Of the reality of this assertion they gave practical proof during the descent, for they went so slowly that Melchior, Tuckett, and I, who were in the same cord with them, were frequently obliged to stop until they got down some of the more difficult rocks. My first impulse led me to wish that Melchior and I should go down to Birkbeck as fast as possible, and leave the rest to follow with the ropes; but on proposing this plan, some of the party objected, and, accordingly, we continued the descent as before. For a considerable time Birkbeck shouted to us, not knowing whether we could see his position. His course had been arrested at a considerable distance above the bottom of the slope, by what means we know not; and just below him stretched a snow-covered crevasse, across

which he must pass, if he went further. We shouted to him to remain where he was, but no distinguishable sounds reached him; and to our dismay, we presently saw him gradually moving downwards,—then he stopped,—again he moved forwards, and again—he was on the brink of the crevasse; but we could do nothing for him. At length he slid down upon the slope of snow which bridged the abyss. I looked anxiously to see if it would support his weight, and, to my relief, a small black speck continued visible. This removed my immediate cause of apprehension, and after a time he moved clear of this frail support down to the point where we afterwards joined him. Bennen was first in the line; and after we had descended some distance, he untied himself, and went down to Birkbeck. It was 9.30 when he reached him. He told us he was becoming faint, and suffering from cold. On hearing this, Melchior and I determined to delay no longer; and, accordingly, unroped, and trotted down to the point where we could descend from the rocks to the slope upon which he was lying. Arrived at the place, I sat on the snow, and let Birkbeck lean against me, whilst I asked him if he felt any internal injury, or if his ribs pained him. His manner of answering gave me strong grounds for hoping that there was little to fear on that score.

The next thing was to get him down as fast as possible, and the sledge suggested itself as the most feasible plan. Only the day before, at Contamines, I had had the boards made for it, and without them the runners (which, tied together, served me as an alpenstock) would have been useless. Two or three attempts were made before I could get the screws to fit the holes in the boards and runners, and poor Melchior, who was watching me, began to show signs of despair. At length, the operation was completed,



OUTLINE SKETCH OF COL DE MIAGE.

and the sledge was ready. We spread a plaid, coats, and flannel shirts over the boards, then laid Birkbeck at full length on them, and covered him as well as we could; over his face we laid a veil, and above this, at his request, a white handkerchief.

Now came the "tug of war," for the snow was much softened by the sun, the slope was steep, and there were several crevasses ahead; added to this, there was difficulty in getting good hold of the sledge, and, every five or six steps, one or other of the bearers plunged so deeply in the snow that we were obliged to halt. Birkbeck was all the while shivering so much that the sledge was sensibly shaken, and all the covering we could give him was but of little use.

From hints previously given me by a medical friend in London, I was well aware of the great danger Birkbeck was in, owing to the vast amount of skin which was destroyed, and I felt that every quarter of an hour saved was of very great importance; still the frequent delays could not be avoided. If there were only three bearers ready, I made a fourth; if there were four at hand, I relinquished the post, and carried their *haches*, &c.

For a time we staggered along across the slope, fearing to descend, lest we should be involved in the numerous crevasses which lay below us. Once clear of this difficulty, we steered downwards to the point where our friends had gone to wait for us, as we had begged them not to follow us to Birkbeck.

The party was now re-united, and the travellers lent more of their garments, as a covering for Birkbeck. Mr. Tuckett produced some effervescing powders, as soon as we reached water, which were most acceptable to Birkbeck and others.

When the slopes of snow were passed, we sent Mollard

(one of our local guides) forward, to obtain more bearers, and to get a proper stretcher. In half an hour more we had dragged Birkbeck over a long horizontal plain of snow, and shortly afterwards we were clear of the glacier. At this point, Stephen kindly offered to go down to the valley, and cross the Col de Vosa to Chamounix, in search of an English doctor. Tuckett wrote out, and took a telegram for Mr. Downton (English chaplain at Geneva), begging him to come to St. Gervais at once, with the best surgeon he could obtain. He also promised to see the doctor of the baths, and have him in attendance on our arrival in the valley, together with a carriage, to convey Birkbeck from Bionay to St. Gervais.

We next had to attack the moraine, very steep at this point; and Melchior was obliged to go forward, and open steps, to avoid slipping, as we went over it with our burden. A new mode of carrying was adopted, as the former was impracticable on the steep, shifting moraine. Melchior put his shoulders under the front part of the sledge, and, bending down his head, walked forward in this position, whilst one or two others carried behind. Fortunately, the sufferer did not seem to care much whether his head or his heels were the higher. I say fortunately, for it was impossible to keep his head always on a level with, or higher than his body. Many were the halts on this trying moraine; but at last it was behind us, and delighted we were when we soon afterwards reached grass-slopes.

Mather had shortly before this gone forward to the chalets of Miage to order some water to be heated, and to send forward any men he could meet with. Hoste (one of the guides from this neighbourhood) had gone back for some of the baggage that we had been obliged to leave behind, and thus I and the faithful three —

Melchior, Bennen, and Perren,—were alone with my poor friend. Round my neck hung two wine gourds, left by my provident friend Tuckett, and from time to time I gave some of their contents to the three bearers, as it seemed to keep them in heart and refresh them. Though their exertions were very great I did not allow them long rests, so anxious was I to get Birkbeck to warmth, and bed, and rest. After they had sat two or three minutes on the grass I used to catch Melchior's eye, and show by a sign that we ought to be off again. Melchior always, at once and most cheerfully, responded to this appeal, and when he rose the other two did the same. I preferred thus communicating with Melchior, because we knew one another well, and I was not afraid of his misunderstanding my motives, though I knew their exertions fairly entitled them to longer halts. The footing was now secure and that is all that could be said in favour of this part of the descent, for frequently we came to abrupt slopes of rock, which to an ordinary walker would have appeared difficult, even without anything to carry. We had so secured Birkbeck, with ropes and straps, that he could not slip off the sledge, otherwise he would on these occasions at once have parted company with his stretcher, and rolled down the rocks. The chalets of Miage lie on a perfectly horizontal plain, from which springs that spur of the mountain which we were now descending. Half an hour before we reached this plain Mollard reappeared. He had been down to "La Vilette," nearly as far as Bionay, for a stretcher and a staff of porters. The last quarter of an hour before gaining the plain of Miage was somewhat trying; on most sides we were hemmed in by precipitous rocks, and the best line of march lay down the sides, and sometimes along the bed of a rushing

mountain torrent, where we had to step from rock to rock, and sometimes lower Birkbeck four or five feet at a time.

As we had now a stronger force of bearers we got on with less trouble and fewer halts, merely stopping to give our poor friend a cup of water occasionally. After the plain was reached the chief difficulties were overcome. An hour later we got to the chalets, where Mather had prepared the hot water, and we now made an attempt to place Birkbeck more comfortably. The stretcher was turned upside down (that the legs might help to keep him in his place), a mattress of straw and dry blankets was hastily prepared. Birkbeck was lifted off the sledge and laid on the grass. The sledge was bound with ropes to the stretcher, across which a piece of board was fixed, projecting beyond the foot of the sledge so as to leave at least six feet clear for the mattress which was now placed upon it; two or three blankets were then laid over the mattress, and the sufferer was placed on his new couch. He had been wrapped up in a plaid of Stephen's, and in this I let him remain rather than have to lay bare his terrible wounds for the sake of putting him between the clean sheets which Mollard's wife had thoughtfully prepared.

When the poor fellow was on his new bed, with a pillow under his head, I sent for the hot water and poured some cups of it over his body, thighs and legs, and especially on his feet, which had long been benumbed. We then immediately wrapped the blankets about him, and put some flannel shirts and coats round his feet. To our great satisfaction our patient in a few minutes found himself quite warm, and much more comfortable than he had been since the accident. By the time all was complete it was four o'clock, and we at once gave the word for a fresh start.

We had at least six or seven bearers, and as two only could carry at a time, owing to the narrowness of the mountain path, there was no more delay than the mere changing of hands. When the cavalcade was fairly off, Mather and I had some bread and milk, which were most acceptable after our long exertions in the sun. In ten minutes we were again with our friend, and did not leave him for more than a few minutes till we reached the main valley at Bionay.

Notwithstanding all Melchior had done he said to me (half an hour below the chalets), 'I'll carry one end of the stretcher and then we'll walk faster.' At 6 P.M. we reached Bionay, and two minutes after we had stepped into the road, appeared the trusty Tuckett with the doctor from the baths, in a carriage with a mattress all properly prepared. We were glad to hear Tuckett express great surprise that we had got down so soon, since it was a proof that the bearers had done well. Birkbeck was quickly moved to the carriage, and there deposited on the mattress; the doctor and Mather occupied the two remaining seats inside. I mounted the box, and away we went to St. Gervais, which we reached at 6.30 P.M. Having selected the most airy room, we carried our friend up to bed, cut off his clothes, and the doctor made a thorough examination. He confirmed our previous hope with regard to the injuries being confined to the skin and the shock to the system. This report decided me in my previous intention of sending a letter instead of a telegram to Birkbeck's father, as an announcement of the accident.

Dr. Payen ordered wet cloths to be applied to all the wounded parts, and to be changed every half-hour. From what the medical friend in London had told me of the risk of cold applications in cases where much skin was destroyed, I could not help having some doubts as to the

propriety of using this treatment for any length of time, particularly as the sufferer was in such a chilly, feeble state. Tuckett and I discussed this point when the doctor was gone, and our views coincided.

Tuckett had offered to divide the night with me and proposed taking the first part, promising to call me at 1 A.M.; but he good-naturedly let me sleep on, and it was not till four that I awoke, and at once went to the patient's room. Tuckett told me he had always allowed three quarters, sometimes an hour to elapse before changing the cloths. As Birkbeck was very cold, we used warm water instead of cold, in which to dip the cloths, and we also put blankets and hot bottles to his feet.

It was 6 A.M. on Friday 12th, when Mr. Downton and Dr. Metcalfe arrived. The latter at once insisted on the importance of devoting our first thoughts and care to restoring the vital energy. The pulse was almost, if not quite, imperceptible, and the danger was lest the patient should not rally from the stupor into which he had sunk. We at once procured several hot blankets and sheets, arranged them on a dry mattress, and transferred Birkbeck to them; we put fresh hot bottles to his feet, and covered him with more hot blankets. By Dr. Metcalfe's direction we gave him brandy and milk every half hour. Mather relieved guard as head nurse at this time, and most ably did he carry out the doctor's wishes. Dr. Metcalfe told me he attributed the restoration of his patient in very great measure to the promptness and regularity with which his directions were attended to, and he specially named Mather's care and skill in administering the stimulants. In four hours there was a marked improvement in tone generally, and the pulse was perceptible, and before night Dr. Metcalfe was hopeful about his patient's final recovery. He was of opinion that the cold water was an excellent application

for the first few hours, to allay fever and inflammation ; but it required very close watching that it might be stopped at the proper moment. In his opinion the cold treatment had been carried on too long.

The following morning Birkbeck was apparently out of danger, and day by day, increased in strength. We persevered in applying wet lint covered with oiled silk, which was daily changed. In about a fortnight all the dead skin (cutis) came off piece by piece, and the wounds throughout looked remarkably healthy, and were healing as well as we could have expected.* The shock to the system and nerves will take most time for complete restoration.

I left St. Gervais on the 3rd of August, my proper leave of absence being at an end, and took wing believing that my services were no longer needed as they were so ably fulfilled by Mr. George Stansfeld and Joseph, the nurse. The gentler part of the nursing I had long surrendered to Mrs. Birkbeck and Miss Stansfeld (who had gone to Switzerland on hearing of the accident).

Though I have written so much I seem to have a great deal more to tell ; and first, — let me return to the point where we found Birkbeck on the snow and describe his appearance. His legs, thighs, and the lower part of his body were quite naked with his trousers down about his feet. By his passage over the snow, the skin was removed from the outside of the legs and thighs, the knees, the whole of the lower part of the back and part of the ribs together with some from the nose and forehead. He had not lost much blood, but he presented a most ghastly spectacle of bloody raw flesh. This, added to his great prostration

* This account was written shortly after the accident, and I regret to say the hope of our friend's speedy restoration was soon interrupted by less favourable symptoms, and he is still not quite recovered.

and our consciousness of the distance and difficulties which separated him from any bed, rendered the sight most trying. He never lost consciousness. He afterwards described his descent as one of extreme rapidity, too fast to allow of his realising the sentiment of fear, but not sufficiently so to deprive him of thought. Sometimes he descended feet first, sometimes head first, then he went sideways, and once or twice he had the sensation of shooting through the air.

The slope where he first lost his footing was gentle, and he tried to stop himself with his fingers and nails; but the snow was too hard. He had no fear during the descent, owing to the extreme rapidity; but when he came to a halt on the snow, and was ignorant as to whether we saw, or could reach him, he experienced deep anguish of mind in the prospect of a lingering death. Happily, however, the true Christian principles in which he had been brought up, led him to cast himself upon the protection of that merciful Being who alone could help him. His prayers were heard, and immediately answered by the removal of his fears; and he forthwith, in their place, experienced a strong and unchanging conviction that his friends would reach him, and rescue him from his perilous position.

Dr. Metcalfe's report of the case:

'When first I saw Mr. Birkbeck, his position on the bed was that of extreme prostration of the nervous system. He was lying on his back with the arms and legs extended downwards, and showing from their positions an extreme want of nervous power. The face was much swollen, so as to prevent any expression; the forehead having the appearance of a bladder partly filled with water, and, at the same time, much discoloured by the scratches and the effects of the sun. The nose, also swollen, was on the right side blackened, as if a piece of black leather had been gummed on one side of it, and spread over the cheek in a triangular form of about one inch wide by two long. This patch was skin, killed by friction in the fall. The eyes were uninjured;

only showing the dilatation of pupil common to a great nervous shock. The eyelids were swollen, nearly closed and red. Each hand was much swelled and bruised on both sides, the back of each discoloured, and patches of skin destroyed by friction, whilst the ends of the fingers were denuded and worn down by their contact with the hard snow. To those accustomed to the accidents from machinery called in Manchester and Leeds "brush burns" (where the friction of a strap or brush in quick motion passing over a part without removing the flesh destroys its vitality), the resemblance of the present case would be striking. The lower jaw was painful when moved, as if it had received a wrench in the fall, though at the same time protected from abrasion by the collar of his coat. The mind appeared quite right in all points, except the semi-dulness consequent on a great shock, which here was both bodily and mental; the injury being by comparison gradually received, not instantaneous. The voice, though feeble and used with some effort, evinced no wandering nor loss of power; whilst the intonation might be accounted for by the swollen lips and half-closed mouth. On my first seeing him the pulse was barely perceptible, the extremities were cold, as was also the rest of the body, and the general impression produced was that power of reaction was lost, or as nearly so as possible. No bones were injured, no vital organ affected, and the danger to be feared arose from the great extent of surface injured. The marks began on one side, high up on the chest, as if the arm had been thrown up and the clothes turned over the head; then, lower were transverse scratches, running round the sides, again diagonal ones, in some parts the skin not distinctly scratched but torn and bruised. The back, both from the lower part on both sides and some distance upwards, was also torn and bruised. The legs, on the outside, were cut in every direction according to the momentary position as he fell down; there was a wrench on the right thigh, causing some swelling at first on the inside. The most severe local injuries were on the knees, and outside the calves on the legs, where the true skin was nearly destroyed. Before I saw Mr. Birkbeck the doctor on the spot had applied wet towels to all the wounds. The patient's friends, however, had most judiciously discontinued the constant change of them, and placed hot water to his feet and covered him with blankets. A decided change appeared to be needed, and I removed all the wet towels, and replaced them with hot blankets

and sheets; giving brandy and milk every half hour. Hour by hour there was a gradual improvement in heat and vital energy.'

Thus Dr. Metcalfe concludes his report. In common justice to him I must mention how carefully he watched the case so as to avail himself of any change; he even proposed to sit up the first night, though he had been travelling the whole of the previous one; but as Birkbeck appeared so much better before evening, I would not consent to this arrangement, and his other nurses divided the night between them.

From Dr. Metcalfe's immense practice in cases of accidents he was quite at home in this, which to some might have been very difficult from its novelty.

Dr. Hennen, an old friend of mine, arrived about a fortnight after the accident; he kindly visited Birkbeck the morning after his arrival and was present when we were dressing him. Dr. Hennen expressed surprise that so much progress should have been made in the time, and he appeared more astonished at the prospect of Birkbeck's ultimate recovery than that his life should have escaped in the first instance, or that we should have got him down alive. Dr. Hennen, who was making some stay at St. Gervais, kindly offered his services so long as he remained. Birkbeck was most happily provided with a continual supply of both medical advisers and nurses; when one was obliged to go, another at once appeared. Dr. Metcalfe performed the most difficult task of all, viz., raising the sufferer from almost fatal prostration to a state apparently pretty free from danger. Our work afterwards merely required watchfulness and delicate handling.

Mrs. Kennedy, an English lady staying at St. Gervais, kindly made us two sets of coverings for the legs, thighs, and back, with strings attached; and these were vastly

more convenient than bandages, and did not require a quarter of the time to adjust them.

Madame Naville Saladin, from Geneva, was most kind in various ways. Through her means we obtained a supply of French lint (*charpie*), when we were entirely without any English; and at her request, a Genevese doctor (M. Brot), who was staying at St. Gervais with his family, good-naturedly superintended our doings in the interval after Dr. Metcalfe had left us until Dr. Hennen came. Others, both English and foreigners, were very obliging in offering aid. Mrs. Fane, from Lincolnshire, who was then staying at the baths with her family, at once sent her son, an Indian officer, to offer her services in any way. She kindly supplied us twice with old linen, and offered us the use of her man-servant; but this latter we did not require.

On Friday, the 2nd of August, Mollard and I went to a point about 100 feet below the position where we reached Birkbeck. My principal object was to ascertain its altitude, in order that, by taking the difference between its height and that of the Col, we might know the exact distance that Birkbeck fell. Tuckett and I made observations with sympiesometer and aneroid on the Col, before the accident. The result of our observations is as follows:—

The height of the Col de Miage is 11,095 feet. The height of the point at which Birkbeck finally came to a standstill is 9328 feet; so the distance he fell is, in *perpendicular* height, 1767 feet.

During the intervening three weeks, vast changes had taken place in the glacier. The snowy coating had left the couloir in parts, thus exposing ice in the line of Birkbeck's course, as well as a rock midway in the slope, against which our poor friend would most likely have struck, had the accident happened later.

The whole couloir was divided from side to side by a wall of *névé*, of from ten to twenty feet in height, over which, at a later period, he would inevitably have been precipitated. Huge and continuous crevasses had opened at the foot of the slope on which Birkbeck's course had been arrested, so as to cut it off from the plain of snow across which we had dragged him, and by which we had found an exit from the glacier world. At this second visit it would not have been practicable to carry the sufferer the way we did; and the only alternative would have been to go over the difficult rocks and broad steep slopes of snow by which Mollard and I approached the foot of the Col.

This is one more of that long chain of providential arrangements, by the combination of which we were enabled to save Birkbeck's life.

(1.) The recent snow, and favourable state of the glacier, enabled us to take an easier and much quicker route, if not the only possible one for a wounded man.

(2.) We had a singularly strong party of guides, without which we could not have got him down in time to afford any chance of his recovery.

(3.) If we had not had real efficient men as travellers in the party, we should not have got the telegram sent to Geneva; and a few hours' delay in the arrival of Dr. Metcalfe would probably have been fatal.

(4.) The day was perfectly calm and cloudless; had there been wind, or absence of sun, the cold might have been too much for such a shaken system to bear.

(5.) We had with us the very unusual addition of a sledge, without which it would have been scarcely possible to have carried him down.

To whom, then, is due the praise for all these mercies? Surely to Him who guides and protects us day by day.

To Him, then, let us give all glory and thanks, as often as we call to mind that wonderful chain of mercies by which He enabled us to rescue our friend, and thus averted sorrow from many hearts.

One thing there was which greatly lessened the mental trial to those engaged in bringing Birkbeck down to St. Gervais, and afterwards in attending upon him; and that was, his perfect calmness and patience,—and of these I cannot speak too highly. No doubt it contributed greatly to his recovery.

I hope I have at least glanced at all interesting points connected with this sad accident, which was really as unlikely to have happened as that a man, in looking out of a window, should overbalance himself, and break his neck.

CHAPTER IV.

THE HIGH LEVEL GLACIER ROUTE FROM CHAMOUNIX TO ZERMATT.

1. INTRODUCTORY REMARKS.
2. THE COL D'ARGENTIÈRE FROM CHAMOUNIX TO ST. PIERRE.
3. THE COL DU SONADON FROM ST. PIERRE TO THE TOP OF THE COL.
4. THE COL DU SONADON FROM THE TOP OF THE COL TO CHERMONTANE.
5. THE COL DU SONADON FROM THE TOP OF THE COL TO VALPELLINA AND PRERAYEN.
6. THE COL DE CHERMONTANE FROM CHERMONTANE TO AROLLA.
7. THE COL DE LA REUSE DE L'AROLLA FROM CHERMONTANE TO PRERAYEN.
8. THE COL DE LA VALPELLINE FROM PRERAYEN TO ZERMATT.

1. INTRODUCTORY REMARKS.

BY FREDERICK WILLIAM JACOMB.

ROUTINE may be exported as well as retained for home consumption. Even in the Alps its spirit is not extinct, and a philosophy, of which the sum is—

“Fain would I climb, but that I fear to fall;
Then it were better not to climb at all”—

still appears to be the influence which directs the great tourist tide, that, every travelling season, ebbs and flows between those centres of Alpine attraction,—Zermatt and Chamounix.

North of the Pennine chain, by Visp and the Rhone Valley to Martigny, and thence over the Tête Noire or Col de Balme, or, south of the chain, by the pass of St. Théodule to Châtillon, Aosta, and Courmayeur, and forwards over the Cols de la Seigne and du Bonhomme, have been the regulation routes to Chamounix. More enterprising spirits, indeed, gave a higher flavour to the tour by crossing direct from Courmayeur to Chamounix over the Col du Géant; but, in the large majority of cases, the St. Bernard was apparently considered, even by pedestrians, the most exciting alternative. And so the ruts of custom grew deeper every year, and the stream wore a more permanent channel, to keep within which was considered the correct thing.

Nearly twenty years ago, however, our own distinguished

countryman, Professor Forbes, accompanied by the well-known Swiss geologist, Professor B. Studer, had drawn attention to portions of the magnificent scenery lying between these hackneyed tracks. The vivid description of his passage from the Val des Bagnes to Aosta by the Col de Fenêtre; from the Eringer Thal to Aosta by the Col de Collon, and to Zermatt by the Col d'Erin; and, more recently, from du Tour to Orsières by the Col de Saléna, have become "household words" to many tourists.

Thanks principally to him, and not a little also to the map of M. G. Studer, the travelling public gradually adopted, at least, the extreme portions of the improved route; and the Col d'Erin at one end, with the Géant or the Saléna at the other, were not unfrequently crossed by the more adventurous traveller. The Col de Collon yet, however, continued in undeserved neglect, and the vast remainder of the intermediate terrain was not even explored.

Within the last few years, however, a bolder spirit has animated our mountaineers, and, in the increased light thus thrown upon Alpine topography, the district in question has largely shared. Pioneers in this great work were the Messrs. Mathews, by their ascents of the Vélán, Combin, Mont Avril and Graffeneire, and investigation of the Val des Bagnes and its neighbourhood; and Mr. Dodson, by his adding, in the shape of the Col du Tour, a "various reading" to the Saléna.

Still, few travellers passing from Zermatt to Chamounix, or *vice versa*, ever thought of including more than one of these first-class passes, and three-fourths of the line of country, comprising many virgin peaks and glaciers, remained comparatively unknown.

During the seasons of 1860 and 1861, however, an entirely new route has been opened out, not only connect-

ing the two centres in almost a direct line, but offering the additional advantage of exploring some of the most noble glaciers and snow-fields to be met with in the Alps.

On referring to the map, it will be observed that this route consists of four new passes, each occupying a day, and of an intermediate link, for which part of a day is sufficient, if it be not added to either the first or second pass.

The first is from Chamounix, by Mr. Winkworth's new Col d'Argentière, ascending by the glacier of that name from the Col de Balme, and thence descending upon Orsières or St. Pierre. The second day is from St. Pierre to Chermontane up the Glacier du Sonadon, passing close under the south end of the Graffeneire, crossing the new Col du Sonadon, and down the Glacier du Mont Durand. The third day is from Chermontane to Prerayen by the Glacier of Chermontane and Mr. Tuckett's new Col de la Reusse de l'Arolla, with the alternative of reaching the Châlet d'Otemma, from the same starting-point, by the Glacier de Pièce and Messrs Buxton and Cowell's new Col de Chermontane. The fourth and last day is, either from the Châlet d'Otemma past the Dent des Bouquetins, to the Col de la Valpelline, considered by Messrs. Buxton and Cowell as practicable; or else, from Prerayen, at the head of the Valpelline, by the new Col of that name to Zermatt, passing along the Zardezan glacier, by the south of the Tête Blanche, and thence down the Zmutt. Thus the new "High Level" route is complete, and a *grand course* of inexhaustible interest, traversing, as it does, almost throughout its entire length, a series of the most magnificent glaciers and snow-fields.

The intermediate link referred to is in passing from the châlet of La Neuva in the Val de Ferret to Orsières or St. Pierre, inasmuch as crossing from Chamounix to La

Neuva will generally be found to give the traveller a sufficiently ample day's work, without adding to it a walk to St. Pierre or Orsières. If, however, instead of going round by Orsières, a passage be made from La Neuva direct to St. Pierre, across the intervening ridge, it might be possible to include it either in the excursion to La Neuva, or in the following day's employment on the Col du Sonadon. Neither that Col, the Valpelline, nor the Reusse de l'Arolla (or its alternative, the Chermontane) occupy more than an easy day, and the mountaineer would probably be sufficiently fresh to add the link to either the Sonadon or Argentière, and so confine the entire route to an expedition of four days.

2. THE COL D'ARGENTIÈRE, FROM CHAMOUNIX TO ORSIÈRES AND ST. PIERRE.

BY STEPHEN WINKWORTH.

THERE is perhaps no portion of the Alps which, considering its proximity to one of the great centres of Swiss travel, receives so little attention in proportion to its interest as the range of Mont Blanc to the E. of the Mer de Glace. How few, for instance, of the thousands who every year cross the Col de Balme, or ascend the Montanvert, think of visiting either of the two great glaciers that flow into the valley of Chamounix between those points. One of these, the Glacier du Tour, has been already described in the first series of "Peaks, Passes, and Glaciers," and the following account of the Argentière, and of a passage effected from it to the Swiss Val Ferret by the Glacier of La Neuva, will, it is hoped, afford a further proof of the yet unexhausted variety of scenery in the ice-world of Mont Blanc.

If the reader will turn to the map he will see that the Glacier of Argentière flows in nearly a straight line from the axis of the main chain almost to the village bearing the same name. It is, in fact, the largest glacier having one name, and flowing in one direction, in the whole range. The lower and middle parts are very much crevassed, but the upper portion is level and easily traversed. The passage across the main chain, described in the following pages, is not, as its name might seem to imply, over

the rocks at the very head of the glacier, which seem from the north quite inaccessible, but through a gap, reached by a long and steep climb up a kind of bay or recess at the S.E. corner. It is by far the highest pass in the Mont Blanc range, being, as computed by Mr. Tuckett during a three hours' halt at the top in August, 1860, 12,556 feet above the level of the sea, and ranking fifth in order of height among Swiss passes, — the other four being in the Monte Rosa district. The discovery of the passage was made by Auguste Simond, to whose coolness and readiness the writer is indebted for the success of the expedition.

In the summer of 1860 I visited Chamounix, and in an excursion to the Jardin, and a passage of the Col du Géant, acquired my first knowledge of the peculiar character and sublimity of the range of Mont Blanc. I had procured the services of Auguste Simond in these expeditions, and he told me of a new col he had discovered while searching for crystals among the rocks at the S.E. corner of the Glacier d'Argentièr. He had not crossed it, but thought he knew its situation well enough for us to attack it from the S. on our way back to Chamounix. We were, however, foiled in our attempt by a heavy fall of snow on the Col Ferret, which forbade all hope of success, especially as Simond knew the southern side to be very steep and liable to avalanches; so we returned to Chamounix by the Val Ferret, the back of the Mont Catogne, and the Tête Noire,—a very interesting and varied walk. In the summer of 1861 I revisited Switzerland with my wife, and again had A. Simond as guide. He met us by appointment at Andermatt, and was not long in telling me that the Col d'Argentièr had not yet been crossed,—Messrs. Tuckett and Wigram having, indeed, reached the col under his guidance the day after I left Chamounix, but having been unable to

complete the passage, owing to the soft and dangerous state of the new-fallen snow. Of course we settled to attempt it on our arrival at Chamounix, though the earliness of the season, and the amount of snow in the higher regions of the Alps, made Simond doubtful of success. We were, however, rendered more sanguine in this respect by the favourable state of the snow on the Col du Géant, by which pass we reached Chamounix on the 19th of June, and I at once engaged P. Tobie Simond, who had been my second guide in 1860.

The weather had been beautiful, but a change was evidently brewing, and I felt that no time was to be lost in making our attempt. Accordingly, on the afternoon of the 21st of June, I walked up to Simond's house near Les Tines, where I found him and his son François busily engaged in preparing the wherewithal to make our party comfortable at the chalets of Argentière. Simond told me he wanted to take his son as porter to the chalets, and on to the upper glacier, and eventually the lad made the whole expedition with us. We left Simond's house about 4 P.M., ascending sharply through meadows into a wood, and soon found ourselves looking down on the Mer de Glace from a point nearly above the Chapeau. We then turned to the left, still ascending among trees, whose shade was very refreshing in the hot and rather sultry afternoon. In about an hour and a half we emerged into an open space, and crossed some streams which flow from the Glacier de la Pendant. A little more wood and another stream or two brought us to the chalets, which are some little distance from the Glacier d'Argentière, and not far from the N.E. corner of the Glacier de la Pendant. These chalets, like most of those on the higher Alps, are not inhabited till July, and we therefore had the place to ourselves. In the one devoted to the art of cheese-making we soon had a

good fire, and proceeded to unpack and attend to the comforts of the inner man, by this time grown somewhat clamorous. Auguste now found, to his great regret, that he had forgotten to bring candles, and also some fresh butter he had made expressly for the occasion. We managed to make ourselves very comfortable without these luxuries, and before long I clambered up to a sort of wooden hammock, above the cow-pens in the other chalet, and with my knapsack for a pillow, and the stars looking down through the gaps in the roof, soon fell asleep.

About 12.30 A.M. Auguste came in to wake me, with the intelligence that the weather continued fine, but was not frosty, and he feared the snow would be soft. We were soon at breakfast, and at 1.30 started on our way, the moon, in her third quarter, giving us just light enough to see our steps for about twenty minutes, when she sank behind the hill, and left us to pick our way with some difficulty across the streams and beds of snow. The path ascended slightly, and then lay along the face of the hill. We made but slow progress, owing to the darkness, and did not get to the glacier till 3, though even then we were too early, and had to wait a little for sufficient light to see our way properly. I regretted very much that we were thus unable to enjoy the full beauty of the crevasses, which in this part of the glacier are very numerous and grand, the incline being considerable. The ice on which we stood has its origin in the snows of the Aiguille Verte, and we did not get on to that which flows from the head of the valley till we reached the upper level of the glacier.* This took us till nearly 4, so that we had now the full light of early morning. It was beautifully fine, a few misty clouds to the N. being the only vapour visible.

* The two glaciers are, however, undistinguishable, as there is no moraine to separate them.

We had now reached a point whence we could see the whole upper glacier, though not the col. The view was very grand, and of a character quite different from any glacier scenery I had previously seen ; and while Simond adjusted the rope, which it was now thought prudent to use, I had time to engrave the principal outlines deeply on my memory. Before us lay the glacier, level, with scarcely a visible crevasse, piercing to the very axis of the main chain, and surrounded on all sides with seemingly inaccessible precipices, save where it fell in magnificent confusion towards the valley. Immediately on our right towered the Aiguille Verte, white to the very summit, and yet so steep that one wondered how snow and ice found any lodgment. S. from the Aiguille Verte, and tending rather to the E., ran an uninterrupted chain of precipices, separating the Glacier d'Argentière from the Talèfre, and crowned by those beautiful and often fantastic aiguilles which form one of the most striking characteristics in the scenery of the Mont Blanc range. These precipices were mostly too steep for snow to rest on, except in the couloirs, which streaked their sides with white ; but midway between the Aiguille Verte and the head of the glacier rose a graceful snow-covered peak, the highest point of the Tours des Courtes. Right before us, at the southern extremity of the glacier, the Mont Dolent rose in a beautiful cone of snow, fully 4000 feet above our level. Across the glacier on our left were the craggy precipices of the Aiguilles d'Argentière and Chardonnet, more massive and rugged than the Aiguille Verte or Mont Dolent. The eastern boundary of the glacier, connecting these Aiguilles with the Mont Dolent, is more broken than the two others, and to the glacier explorer even more interesting. Between the Chardonnet and the Argentière is a tributary glacier, steep and crevassed, but I thought not impracticable, and leading — who knows

where? Simond thought to the Glacier du Tour, and at the time I agreed with him; but it seems to me now quite possible that a passage may exist by it to the Glacier de Saléna. At any rate it is an interesting question, and had we not been engaged in the solution of a still more attractive problem, we should have tried to decide it.

We had, however, no time to lose, and pushed on towards the S.E. corner of the glacier. In about half an hour we came in sight of the col, and stopped for our second breakfast, just before quitting the level to begin the ascent. Looking back from this point we had a fine view of the Buét, over the shoulder of the tributary glacier lately mentioned. The ascent proved, as is constantly the case on the snow, much longer than I had anticipated. We were now in a kind of recess, invisible from the point where we got our first view of the upper glacier, and rising pretty sharply towards the S.E. The rocks on the N.E. of this recess are said to be very rich in crystals, and some of the finest smoky varieties, the most expensive in the Chamounix collections, are found here. It was while hunting among these crags that Simond had discovered the col we were now approaching. Near the top we took to the rocks, and met with several crystals, one or two of considerable beauty.

We reached the col at 8.30 A.M., and found at once the bottle which Messrs. Tuckett and Wigram had placed in a convenient niche the year before, and also Mr. Tuckett's thermometer, which indicated a minimum temperature of -14° Fahr. After carefully noting the latter, I sat down to rest and enjoy the glorious view, while Simond almost immediately began reconnoitring for the descent. The weather was still fine, though not so clear as in the early morning, and the tops of the Italian Alps were mostly obscured by mist. Still we saw enough to make us think.

that our point of view was superior to that of the Col du Géant, chiefly from the fact that we were at least 1400 feet higher, and some peaks, including the wonderful cone of the Grivola, were quite clear.

To the E. the view was free from cloud and very extensive. Immediately before us were the Mont Vélan, resembling the nave of some vast cathedral, with huge rock-buttresses springing from its side, and the still more massive Grand Combin or Graffeneire. This latter particularly attracted me, and gave me a greater sense of size and power than almost any other mountain I know. The Matterhorn, a little further to the left, was partly covered by the Dent d'Erin (or d'Hèrens), but the Dent Blanche was free and very beautiful. Beyond these again was the graceful form of the Weisshorn, still a virgin summit, though destined soon to yield to the indefatigable enterprise of Professor Tyndall. Then came a number of lesser mountains, and a gap indicating the Rhone valley; and beyond this were more snowy summits, some belonging probably to the range W. of the Gemmi, and some to the Bernese Oberland. I feel, however, that in thus picking out a few of the most conspicuous names, I am giving the reader but a faint idea of the host of mountain peaks which filled the view, range beyond range, till their outlines were lost in the soft haze which enveloped the horizon.

But Simond is already some distance below, and will be signalling for us to follow him directly; so I write our names and deposit them in the bottle, and look to see the kind of work before us. The col on which we are standing is a ridge of snow like a Gothic roof, running from rocks connected with the Mont Dolent on our right, to those we are just leaving on our left,—a distance of about one hundred yards. The last ascent has been about the steepness of an average Gothic gable, but the southern

side is much steeper, so that the little strip, which is all we can see of the Val Ferret, seems just at our feet, and yet the châteaux of the hamlet of Folie are scarcely visible. This snow-slope, by which we have to descend, is broken here and there almost from the top by furrows, which soon deepen into channels more or less deep and wide, and down which, in the present soft state of the snow, avalanches are often pouring. Simond has made his way down a ridge between two such channels, and now signals us to follow him, as he has found some jutting rocks which will help us. I go first, with a rope round my waist, held by Tobie Simond, and François brings up the rear; and as the snow is soft, and gives good foothold, we soon reach the rocks. These, interspersed with short snow-slopes, last about half an hour; and then, to gain a fresh series, we are obliged to traverse about 150 yards of steep snow, scored with deep avalanche channels. Of course we cross as rapidly as we can, but for some reason the lad François lingers, and Auguste will not stir till his son has passed the danger. He crosses safely, and we scramble on down rocks, then another snow-ridge, and then more rocks, some of which task our climbing powers. At last they get too precipitous, and we must take again to the snow.

We are now approaching the Glacier proper, and see, to our perplexity, that the slope we are on ends in a snow-cliff or precipice, inside which runs a crevasse. This formation is bounded on either hand by precipitous rocks, and seems to bar all egress. After some time Auguste discovers a channel, so deep that it cuts the snow-cliff to the bottom, and allows access to the glacier. The dirty colour of the channel shows it to be a frequent passage for débris and stones, as well as snow; and while we are debating whether to commit ourselves to it for the few minutes that would

be necessary, we hear a noise overhead, and, looking up, see an avalanche coming upon us. Happily the rocks on the left are very near, and we get to their shelter in time; but as it is the hottest part of the day, it is thought prudent to wait an hour or two before attempting the channel again. Accordingly we find a little perch on the rocks, and proceed to dinner, as it is now 1 P.M., and we have had nothing since 4.30 A.M. After dinner my companions settle themselves for a siesta, and leave me to the contemplation of the view. It was of course much more circumscribed than that from the col, but still very beautiful,—the Monts Vélán and Graffeneire being the chief points of interest.

About 2.30 we started again, and descending the channel in safety, reached in a few minutes the Glacier of La Neuva*, and had seen the last of our difficulties. We went merrily and rapidly onwards, looking back now and then with no small pleasure at the col and the descent, and at our perch on the rocks, which at one time Tobie thought would have been for many hours our prison. I now discovered that the Glacier of La Neuva did not owe its entire origin to the snows we had just left, but came principally from higher ground to the N.E. It was much crevassed, but looked practicable, and I thought might possibly communicate with the Glacier de Saléna.

We left the glacier where it began to break down into the valley, but found we had made a mistake, and should soon lose our way in hanging woods; so, regaining it, we had a tedious and dirty walk down the moraine, after which at about 4 P.M. we crossed a long waste of stones. I am too little acquainted with the marks of glacier action to decide whether this stony tract is owing to the retreat

* La Folie was the name given to this glacier by the peasantry in the valley, from the hamlet in the Val Ferret, just below its *débouchure*.

of the ice, or to the impetuous rush of the glacier torrents in the spring. As soon as we had got fairly beyond it, and our feet had felt the turf again, we halted for our last meal, and rarely, I think, have cold veal and *jambon* been more appreciated, or St. Jean tasted better than on that occasion. Of course we drank to the new col, still full in view, though now looking so little like a pass that we thought no one would ever find it from this side.* Nothing now remained between us and civilisation, as represented by the little hamlet of Folie, but the main stream of the Val Ferret, called, like its brethren of the Val d'Entremont and the Val des Bagnes, the Drance. This did not at first seem feasible, as the torrent was swollen and rapid, from the melting of the snow by the hot morning sun; but the passage was managed at last by the help of a fir-trunk which we threw across. From Folie we walked down to Orsières, where we arrived at 8.30 p.m., and the next day I returned to Chamounix by the Col de Balme.

I cannot conclude without strongly recommending this excursion to all lovers of glacier and mountain scenery. It is one upon which I look back with great pleasure, and I am sure no one undertaking it could be disappointed, either in the magnificent aiguille and glacier scenery of the Upper Argentière, or in the view from the col, embracing, as it does, the mountain ranges of Savoy, Piedmont, and Southern Switzerland, or finally, in the exhilarating excitement of the steep descent. I think it best to take the pass, as we did, from the northern side, and it is certainly advisable to sleep at the châteaux of Argentière, otherwise the expedition would be too fatiguing.

* In this, however, we were mistaken; for I understand that the Rev. J. F. Hardy reached the col from the southern side not very long after our passage, but did not cross it.

3. THE COL DU SONADON FROM ST. PIERRE TO THE TOP OF THE COL, WITH THE COL DE LA MAISON BLANCHE.

BY FREDERICK WILLIAM JACOMB.

SUBSEQUENT to the opening out of the Col de la Valpeline, other intermediate links of the "High Level" route from Chamounix to Zermatt were supplied by the passages of Cols now described. It remained, however, to force a passage between St. Pierre, or Orsières, and Chermontane to the south of the Graffeneire, by the Glacier du Mont Durand, and the route would then be complete.

Accordingly, on the afternoon of Monday, the 5th August, 1861, Mr. W. Mathews and I walked from St. Pierre up to the Great St. Bernard, in order to compare our barometer with the one at the Hospice, so that with that test, another made a couple of days previously at the observatory at Geneva, and a subsequent one to be taken at Turin, a tolerably safe basis for calculations might be obtained.

We returned to St. Pierre late in the evening, and at 3.45 A.M. on the following morning left its "*Hôtel du Déjeuner de Napoleon,*" charitably hoping that the hostelry had afforded for the consular repast better specimens of Egyptian flesh-pots than it had furnished us. We were accompanied by our two guides, Jean Baptiste Croz and Michel Croz, of Chamounix, two capital icemen, and worthy fellows. Our object was to ascend, by the Col de la Maison Blanche, to the snow-basin forming the head of the Corbassière glacier. To the south of this

basin, and south-west of the Graffeneire, lay apparently a snow Col, which Mr. Mathews, in his ascent of the Graffeneire in 1857, had conceived would connect the Corbassière either with the Mont Durand glacier and Chermontane, or with the valley of Ollomont. If the former, it would constitute the wanting link in the "High Level" route; and therefore its investigation had now an additional interest. If the latter, it would give us, instead of the hackneyed and uninteresting track by the St. Bernard, a new mode of access to Aosta.

Climbing the slopes behind the village, we passed, on our right, a picturesque gorge, whence the torrent of the Valsorey or Vassorey issues in a considerable fall, and soon afterwards reached the upper level of the valley. At the expiration of an hour and a half we gained a point where the valley turned south-east, whilst a tributary stream rushed down the slopes from the north-east. A little beyond the bifurcation is the last châlet. We went north-east, up the side of the tributary stream, and, ascending steeply, at 6.25 A.M. halted for twenty-five minutes for the second breakfast, and obtained, to the west, a glorious view of Mont Blanc and his attendant aiguilles, and, to the south, one equally fine of the Vélan's snowy summit.

Rocks, interspersed with small couloirs and snow-slopes, occasionally requiring the use of the axe, succeeded; and at 9.15 A.M. we reached the top of the crags, and a quarter of an hour later the snow Col de la Maison Blanche itself. The barometer was immediately set up, protected from the sun by a plaid stretched over a couple of alpenstocks, and at 10 A.M. was carefully observed. The height of the mercurial column, compared with the corresponding observations at Turin, Geneva, and St. Bernard, gives the following results, the calculations

having been made by the tables of Delcros and Guyot, based on the formula of Laplace :—

Turin . . .	11,226 feet
Geneva . . .	11,193
St. Bernard . . .	11,218
Mean . . .	11,212

Southwards from the basin a snow-slope stretched up to the depression under the Graffeneire, which Mr. Mathews had supposed would afford a pass to Chermontane or Ollomont. Fifty minutes took us up the slope, when, to our great disappointment, we found that there was no practicable passage on its further or south side; in fact, that the Col was a myth altogether. The scene was peculiar. A steep ice-slope fell away from our feet to a secondary glacier below. This slope continued in a semicircle to the east, sweeping round a kind of bay under the Graffeneire, and forming a huge crater, its sides lined with precipitous ice-slopes, furrowed with the passage of débris to the glacier filling the basin below. It was obvious that no communication forwards in this direction existed, and that it would be no use cutting our way down; for the rocky ridge forming the further side of the semicircle was an effectual barrier to progress under the Graffeneire, and descending the glacier would lead us more in the direction of the Valsorey and Vélán than either of Chermontane or Ollomont.

Disappointing as this was, in necessitating our return to St. Pierre, yet the excursion had neither been without its use, in establishing the fact that there is no connection between the glacier of Corbassière and either the Durand or Ollomont, nor without an interest, in disclosing around us so magnificent a scene. Westwards stretched the whole chain of Mont Blanc. To the south, on either side of the Vélán, were the singular peak of the Grivola

and the vast snow-slopes of the Ruitor, whose nearer acquaintance we were soon after to make; whilst towards Dauphiné rose a curious mountain, with its top cleft in twain, so as to resemble a pair of wings. The Glacier du Valsorey ran up, eastwards of the Vélán, to a tempting looking Col in the direction of St. Rémy or Etroubles; but, as the further side of it had not been examined, it was impossible to judge whether it was practicable to force a passage in that direction. Facing round, the huge mass of the Graffeneire towered up close above us on the north-east, the slopes of its lower part torn into magnificent snow-cliffs; whilst due north stretched the great basin of the Corbassière glacier, with the peak of the Grand Combin, or Combin de Corbassière, rising in front, and concealing the Petit Combin. This basin on the west elongated into two bays,—the one partially inclosed by the slopes of the Maison Blanche, and the other leading to the Glacier de Bouveire, and the passage effected in that direction to Alève by M. Studer. It appeared to us that the point which we now occupied was about 500 feet above the Maison Blanche. This would give it a height of about 11,712 feet.

After a fifty minutes' halt, we left at noon, and glissaded down the slopes to the Maison Blanche again. Mr. Mathews seemed so delighted to renew his acquaintance with the scene of his explorations in former years, that he skidded down with all his wonted agility. From the Maison Blanche we rapidly descended the rocks and couloirs to our halting-place of the morning, which we reached at 2.30 P.M. Here we made a vigorous attack upon the now useless provisions, got under weigh again at 3.40 P.M., and gained our former quarters at the "*Dé-jéûner*" at St. Pierre, at 5.30 P.M.,—the latter part of the walk being in rain. The resources of the establishment

for an evening meal proved so meagre, even in these enlightened days, that we fully understood why Napoleon had had enough of the inn in his morning refectory, and had passed on to smoke his pipe with the jolly brethren of St. Bernard.

In the evening, Mr. Mathews feeling unwell, it was decided he should go quietly over the St. Bernard next day to Aosta, whilst I should take the two men, and endeavour to force a passage, under the Graffeneyre, on to the Glacier du Mont Durand, and thence, by the châlet of By, to Ollomont and Aosta,—ascertaining, when on the Glacier du Mont Durand, whether it was feasible to traverse it down to Chermontane, and so complete the “High Level” route.

Accordingly, at 4.30 next morning (August 7th), I started with the two Croz', though a short night between two *grandes courses* is rather poor preparation for exploring a series of unknown Alpine passes; but it was important to try and complete the route. As far as the bifurcation before mentioned, which we reached at 5.40 A.M., our line of march was the same as that of the preceding day. From this point, instead of turning off towards the Maison Blanche, we now continued along the Valsorey torrent, and in ten minutes more passed the last châlet. Ten minutes further brought us to the foot of a rock jutting out into the valley, and apparently cutting off further progress. A passage over it, however, was effected in fifteen minutes, by means of a track cut up its face by the herdsmen. We emerged from the top into the upper reach of the valley, which we followed for half an hour, high above the Valsorey glacier.

At 6.45 A.M. we reached a point north-east of the little glacier lake of La Gouille, which nestles under the precipices of the Vêlan, on the further side of the Valsorey gla-

cier, and at its junction with another glacier, called Tzeudey on the Federal sheet. Here we halted for a few minutes to reconnoitre. The structure of the Valsorey glacier was well defined, and at its lower part were some small glacier tables. Looking a little to the east of the lake, the eye rested on the depression, under the east shoulder of the Vélan, and at the head of the Valsorey glacier, which we had, when on the *Maison Blanche* the previous day, supposed to be a Col, over which a passage in the direction of St. Rémy or Etroubles might possibly be made, if the further side of it should be practicable. Its north side, however, on which we were now looking, appeared much broken up. North-eastwards from it towards the Graffeneire, stretched a serrated line of black precipices, seamed with small couloirs and ice-slopes. Under the west side of this ridge flowed along the Valsorey glacier towards us; whilst in the opposite direction came to meet it, from the Graffeneire and the Col which we hoped to make, the Glacier du Sonadon, very dirty in its lower part, and bearing a large lateral moraine.

We were almost at the bifurcation of the two glaciers, and it was clear that, if any communication with the Durand glacier and Chermontane was to be effected, it must be in the direction of the Sonadon glacier, and by a kind of depression in the ridge, which we could see at a great height beyond, under the shoulder of the Graffeneire. But the lower part of the Sonadon glacier was cut off from its upper portion by a vast ice-fall; it would therefore be necessary to scale, almost to a level with the Col, the precipices running down from the Graffeneire, and bordering the glacier on its north-western side, and then drop down on to the glacier, and work up it and the névé beyond to the Col.



THE COL DE SONADON.

Away, therefore, we started up the mountain steeps, across an old moraine, and then up rocks, interspersed with the usual snow and ice-slopes. After some time occupied in this amusement, we came to the conclusion that the second breakfast was a necessary prelude to further conquest; so at 8.10 A.M. we sat down to feed by the side of a stream rushing over the rocks from the snow above. As we did so, Mont Blanc wished us good morning and success by taking off his night-cap of mist, and standing out, with his attendant aiguilles, in unsullied splendour. It was late in the day to get up; but perhaps the hoary veteran had been the preceding day much bored by tourists visiting him, up the well-marked, chicken-bone-and-sandwich-paper-strewn route from Chamounix.

Already young avalanches were beginning to disengage themselves from their parent snows on the eastern ridge, and on the Vêlan opposite us. The halt lasted half an hour, and at 8.45 A.M. we were again breasting the rocks, which we found in some parts very steep. At one point we had to clamber, for a considerable distance, up a kind of waterfall, which did not tend to keep us dry. Beyond this we passed up a couloir, which seemed to have been chosen, with most praiseworthy pertinacity by falling rocks, as the course by which, when tired of dignified solitude and elevated quiescence, they seek a lower level and society of less pretension. I had sent Jean forwards to reconnoitre, and as he dislodged a perfect shower of rocks and stones, for the most part large enough to give us no further trouble in making new passes, Michel and I were put to divers straits, much ingenuity, and unwonted agility, in dodging the lively missiles. Animated by this hostile fire, we worked up the couloir, and emerging higher up at a gap in the ridge, found a shale-bank of

easy slope, down which we quickly shot to the Sonadon glacier below.

It was now 9.40 A.M., and from that time up to 11.10 A.M. we were rapidly pushing up the glacier and the névé above leading to the Col. Throughout the day we had walked fast, in order to have more time for investigating the unknown ground on the further side. We passed under some superb seracs, which, lower down, formed a kind of corridor, ending in two enormous pillars, entrance gates to an avenue fit for giants to traverse. Some of the crevasses through and around which we wound were very imposing, especially one which exhibited a vast crater, or circular grotto, from the roof of which depended icicles, like bundles of spears, bayonets, and other arms of war. Perhaps it was the armoury in which were stored the colossal weapons of the Titanic race. The whole shimmered with that wondrous ethereal blue light so often remarked by Alpine travellers.

There was, however, no difficulty whatever. It was simply a steady grind, occasionally cutting with the axe a few steps up a slope, or making a wide detour to avoid crevasses or treacherous-looking snow. As we approached the Col showers of stones were continually falling from the rocks of the Graffeneire, which rose northwards, or to our left; but they did not reach far enough over the névé to cause us much disquietude. From these rocks the Col fell away in a broad plateau of snow, with a few flat stones in the centre of the depression, whilst on our right hand, or south, the before-mentioned ridge from the Vélán, assuming the name of "Aiguilles Vertes" as it approaches the Col, ended towards the east in a huge snow-hump, shaped like a saddle. Separated from this, and still further east, a line of black rocks, called the Tête de By, ran

down at right angles towards the Durand glacier, and over them, it was clear, lay our way towards the châteaux of By and Ollomont. The actual double peak of the Graffeneire was concealed by its off-shoots in the foreground; but a little to the west lay a secondary glacier, the base of which we had passed in ascending to the Col. This glacier came straight down towards us from the south-west spur of the Graffeneire, and it seemed to us, first, that immediately on the further side of the spur lay the ice-basin or crater which had the preceding day cut off our further progress, under the Graffeneire, from the mythical Col above the Maison Blanche, and, next, that we were now nearly as high as that Col.

This latter fact, coupled with a comparison with points of known altitude, induced us to fix the height of the Col which we had just effected at about 3500 metres, or 11,483 feet. Unfortunately, we had no means of determining the elevation exactly; for the previous day's jolting on the rocks had so disarranged the internal economy of our instrument, that it was suffering from the common disorder of bubbles, which the most energetic treatment had failed to remedy.

From our feet stretched away the Durand glacier in a graceful curve, at first east, and then, tending to the north of east, bounded on its northern side by the precipices of the Tour de Boussine, spurting out from the Graffeneire, whilst the saddle-backed snow-hummock, the Tête de By, and still lower the Mont Avril, flanked the southern edge. The glacier below the névé maintained an almost uniform inclination, except towards its lower end, where, from our elevation, we could see it was broken up and crevassed. Beyond, the eye rested on the slopes and châteaux of Chermontane, while further still stretched up the vast glacier

of Chermontane, or d'Otemma, between the bounding ranges of the Pic d'Otemma on the north, and the offshoots of Mont Gélé on the south. On the further or northern side of the Pic d'Otemma, the beautiful Breney glacier streamed down towards the foot of the Durand. In the far distance Monte Rosa herself was hid, but other parts of the chain were quite distinct.

The Durand glacier appeared perfectly practicable to Chermontane; and as the Col established a communication from it towards St. Pierre, it was now quite clear that the connecting link had been supplied, and that the "High-Level" route was complete. The Col thereupon received the name of the Col Durand; but, inasmuch as the subsequently published sheet of the Federal survey thus designates the Col on the east of the Dent Blanche, it has been considered better, in order to avoid confusion, to give to our Col the appellation of Sonadon, from the glacier of that name up which we had just forced a passage. Moreover, this designation is, perhaps, the more appropriate of the two, as previous observations had almost established the practicability of the lower part of the Durand glacier, whereas the Sonadon glacier had hitherto been a *mare incognitum*.

To prevent any doubt of the route being complete, and of the head of the Durand glacier being as passable as its foot, we resolved to descend the névé a little before turning off for By; for, though we could not yet tell with what difficulties we might meet in getting to By, yet the day was still young, and the establishment of the route too important to allow us to neglect the present chance of examining the head of the Durand.

After twenty-five minutes' halt on the Col, during which we drank to its perfect preservation in a sip from my

whisky-flask—an unwonted excess, which made Michel intensely jocose—at 11.35 A.M. we started down the névé, and found full confirmation of our speculation from the Col above, as to the practicability of the glacier. Mr. Hardy, who crossed the pass three weeks later, gives the following narrative of his excursion.

4. THE COL DU SONADON FROM ST. PIERRE TO CHERMONTANE.*

BY THE REV. J. F. HARDY, B.D.

EARLY on the morning of the 26th of August, 1861, a quaternion of Cantabs, E. B. Prest, G. Johnson, J. A. Hudson, and J. F. Hardy, started from Zermatt to try a cross-country route thence to Chamounix. We had obtained some useful hints on the subject from Jacomb and Mathews, and had been fortunate enough to secure the companionship of Pierre Perren and Moritz Andermatten.

The first day we proceeded by the Col de la Valpelline (described by F. W. Jacomb, p. 306) to Prerayen. When about half an hour from the châtelets, which are dignified by this name, we encountered a Piedmontese peasant, who inquired if we had come from Aosta that day. "No, we have come from Zermatt over the mountains." "Then you go to-night to Aosta?" "No, we sleep here, and pass to-morrow over the glaciers to Chermontane." Pity, fear, and wonder were written in his face, and distinguishable in his tone and gesture, as, with the words, "*Pauvres gens*," he turned, and fled as from hopeless lunatics. I have no doubt that the laugh with which his farewell words were received must have confirmed the opinion

* With the view of maintaining the continuity of the "High Level" route, it has been assumed that each excursion was made from west to east, and titles have been given in accordance with this supposition. The pass, however, described by Mr. Hardy, was taken in the opposite direction. — ED.

which he had evidently formed of our insanity, and could he have been present every time the words "*pauvres gens*" were repeated in the course of the next week, he would have thought us madder than ever. Was the coffee thick, or the milk unattainable,—was the bread hard, or the cheese high,—was a crevasse too wide, or did a stone come rattling down,—"*pauvres gens*" rose simultaneously to the lips of all, and a choral laugh of twenty-horse power was sure to follow.

Leaving the Valpelline the next day by a lateral gorge which opens a little above Prerayen, we kept for about two hours along the regular route of the Col de Collon; then, bearing away to the left for three hours more we reached a col, which we proposed to call the Col d'Otemma, but which I perceive has received from Mr. Tuckett, the first person I believe who passed it, the high-sounding name of Col de la Reuse de l'Arolla. An easy stroll down the Glacier d'Otemma brought us to Chermontane by 3 P.M.

Here we met with a most hospitable reception: we were regaled with the choicest *serac* and an unlimited supply of milk. Shortly after our arrival a young guide of the neighbourhood made his appearance, bearing a large quantity of *fresh white* bread and Parmesan cheese, which he had intended for his own supper. He was easily, however, persuaded to part with these delicacies for coin, and to content himself with the black bread of the *châlet*, which to our taste was somewhat harder than paving-stones, and about as refreshing. As our young friend was anxious to attach himself to our party, we asked him some questions touching the Glacier du Mont Durand, and the Sonadon col by which we hoped on the morrow to reach St Pierre. He first asserted the impossibility of such a passage, and then offered to show us the way. Not exactly

perceiving the advantage to be derived from such uncertain guidance, we declined his services. Thus thrown on our own resources, we proceeded to make a careful examination with our glasses of the Glacier du Mont Durand. We soon perceived that its lower end was too much crevassed to allow of rapid progress, if of any; but we saw good reason to hope that by keeping to the slopes of Mont Avril for an hour or so, we should be enabled to strike the glacier at a point where no serious difficulties were likely to impede us.

Satisfied at having discovered the line of starting, more than half the battle in a new route, we returned to the châtelets to lounge away the summer evening. Soon the cows came trooping homewards, their bells making pleasant music; and we chatted with the herdsmen as they passed from one to another of their comely charges. We now learnt that this was the last night they were to spend at Chermontane, and had we been a day later in our visit, we should not only have met with no *serac* and no milk, but we should have found the châtelet close-barred and locked for the winter. Congratulating ourselves on our good fortune, we gathered round the fire to partake of the coffee which Moritz had prepared with his usual skill, and then betook ourselves to our literally stony couches; but alas! not to sleep. The absence of hay, the paucity of covering, and the coldness of the night, would probably have been easily forgotten could we have secured quiet; but the excitement of our hosts in making preparations for their Exodus, the cleaning of pots and pans, the fuss made over the last batch of cheese which was to be turned out in the morning, and, above all, the horribly unmusical crooning songs of thirty or forty verses, sung to an air which sounded something like "Buy a Broom" reduced to a Gregorian chant, drove the sleepiest of us to utter despair.

At length about 2 A.M. the last pot is polished, and the last song sung. Silence reigns in the hut; now perhaps we shall sleep. Oh, dear, no! nothing of the sort! A pig afflicted with bronchitis takes to railing at the coldness of the weather, and an asthmatic cow joins in his maledictions; a jackass, disturbed by the duo, gives them a bit of his mind; and in a few minutes the air rings with brayings and gruntings and lowings innumerable, "It's no use lying here: let's get up, have our breakfast, and start at once." No sooner said than done. Pierre and Moritz make up the fire and put on the coffee, while we turn out in search of a stream for our morning ablutions.

At 3.40 A.M. our landlord receives our adieux, which have a certain chinking sound about them, and we set to work to climb the lower grass-slopes of Mont Avril. At first we bear away to the left till we are close to the Glacier de Fenêtre, whose pinnacles glitter in the moonlight; then, zigzagging to the right, we find ourselves with the earliest dawn some 200 yards above the right bank of the Mont Durand glacier. Dropping down by some easy shale screaghs, and crossing the moraine, we push up the centre of the glacier for some distance, till we are forced by the increasing crevasses to take to the rocks on the left bank. Creeping carefully along these, we rise above the level of the highest ice-fall, and about 6 A.M. pass on to a nearly even plateau of unbroken névé.

We now make rapid progress; and finding that we have plenty of time before us, we determine to leave our direct route, and examine a col which apparently leads in the direction of Aosta. We reach the col at 7.15 A.M. and find our ideas correct. There is evidently an easy descent* past the châtelets of By to Ollomont, and thence to Aosta itself, upon whose turrets the morning sun is playing.

* This route had been previously taken by F. W. Jacomb.

Beyond, ridge behind ridge, rise the beautiful Italian hills, with colours as rich and as delicately blended as the tints of a ripe nectarine, while Mont Vélan, with its massive buttresses, and the long ridge of the Tête de Chenaille, form a noble foreground. We must not, however, linger here too long. We retrace our steps for half an hour, and then bear gradually away to the left, sweeping round close under some rocks, which we afterwards discover to be the base of the Graffeneire, till at 9.30 A.M. we arrive at a col no doubt; but can it be the col of which we are in search?

Before us lies an extensive glacier stretching far away into the valley beneath. No such glacier appears either in Studer's or in Mathews' map between the top of the Glacier du Mont Durand and St. Pierre; and though we know the maps are incorrect, we can hardly believe in so serious an omission as this. No! we must have blundered in some way; we have kept too much to the right; this must be the Glacier de Corbassière, the valley, the Val des Bagnes. One thing is clear: we must go forward, either down the glacier, or by the rocks into the ravine at our feet, and then hold a council of war as to our further progress. Snatching a few moments for the enjoyment of a *petite goûte*, and of the superb view which our station commands of the whole range of Mont Blanc, we start with all the excitement of explorers down our unknown glacier. For the first few minutes all goes smoothly enough; the snow is in fair order, the crevasses neither numerous nor wide; but we have scarcely descended 500 feet, when these assume so ugly an appearance that Moritz and Pierre run off to examine the rocks. They come back with serious faces, which say clearly "no go" without any need of words, and again we attack the ice. An hour and a half passes, we have been on the move the whole time, yet we have hardly made any perceptible

advance; the crevasses get larger and more entangled, till at last one stupendous chasm bars our path, and deprives us of our last hope of reaching the valley by the glacier. Back again in our old footsteps for upwards of an hour, and then we try for the rocks at a lower point than that at which we examined them before. An ugly moraine separates us from them, and we have to try two or three places before we succeed in crossing it. Once fairly on the rocks, we feel certain of ultimate success; still, from the point at which we have struck them, *descent* is utterly impossible, and we sweep away to the right, rising some two or three hundred feet. At length we come to a queer-looking gully, which some one at once christens "*Le grand Escalier*;" and, though the stones slip from beneath us, and fall from above us in tolerably large numbers, we determine on risking the descent.

Down we go slowly and steadily till we come to a point, where our grand staircase changes into a perpendicular trough, and matters look uglier than ever. Moritz, however, undertakes to get us down. Fastening the rope round me, he dismisses me with an, "*Allez, Monsieur, allez, seulement*," which being interpreted means, "Go-a-head, stick your feet anywhere you can, and nowhere if there isn't anywhere." Proceeding on this principle, I get to the bottom of the trough in safety, unfasten the rope from my waist, and await my companions, who come down one by one in the same fashion, till Moritz is left alone at the top with no one to hold the rope for him. He, however, has long ago made up his mind how to act. Throwing down to us the now useless rope, he spreads himself out as much as he can, so as to get the largest amount of friction called into play, and then with a catch here, and a kick there, rushes down in a mysterious manner, which makes him very hot, and which would carry him consider-

ably farther than he intends, did we not stand with outstretched arms to catch him, and bring him to a safe anchorage.

This was our last difficulty. The rocks became less precipitous every minute, and at 2.30 P.M. we were seated at lunch at the head of the valley. Scarcely had we started again when we met some intelligent natives, who gladdened our hearts by informing us that we were but two hours from St. Pierre. We had discovered the right col, after all. We learnt that the name of the glacier was the Sonadon, and that it was considered quite impracticable. Indeed, as we looked back we saw that it was broken in the most singular manner by a ridge of perpendicular rocks some 300 feet or 400 feet in height, which stretched right across it from one bank to the other. Had we succeeded in dodging the crevasses, we could never have effected a descent by this wall, which was worn quite smooth by the drippings from the glacier.

An easy walk brought us all well pleased, though well tired, to the little village of St. Pierre at 5.30 P.M.; and a good dinner, with a bottle or two of excellent *Fullly*, finished the day.

5. THE COL DU SONADON TO OLLOMONT, OR VAL-PELLINA; THE COL DE CRÊTE SÈCHE; AND THE ASCENT OF MONT GÉLÉ.*

BY FREDERICK WILLIAM JACOMB.

FROM the névé of the Durand glacier below the Col du Sonadon we struck straight up to the Tête de By on the south, over which, we conceived, lay our direction for By. Clambering to the top of the ridge, we looked southwards, on a wide snow-field at a considerable depth below us. In descending the rocks a little caution was requisite, the necessity of which was increased as we cut our way down a small couloir, which, ending abruptly on the edge of a bergschrund, separated the base of the rocks from the snow. A bold jump carried us across the bergschrund, but half buried us in the now softened snow.

After descending the snow-field a little way, we separated, and took different routes towards its edge, in order to save time in seeking for the proper direction. While thus occupied, we started some chamois up the rocks to the west. Jean struck away south-westwardly, Michel rather less westwardly, whilst I went south, and, reaching a few rocks, below which the snow-slopes fell away more rapidly, I halted to eat icicles, and await the pre-arranged signals of the others. Presently I saw Jean returning, a sure sign that his direction was not the right

* Mr. Hardy has described the passage between the Col du Sonadon and Chermontane. An alternative route, however, had been taken by Mr. Jacomb. After giving an account of his descent a short distance in an easterly direction down the Durand glacier, Mr. Jacomb continues his narrative.

one. Shortly afterwards I observed Michel, after carefully sounding with his pole, skidding away down the slopes—an equally certain proof that his route was practicable; so I made a *détour* round the rocks, and was soon glissading merrily towards him. From the foot of the slopes we passed on to some flat slaty rocks, over which the snow-water was flowing, and at 1.5 P.M. sat down in full view of the wondrous Grivola, in the Cogne country, to the south of Aosta.

There was no doubt now of our being able to get down to By, and thence forwards to Ollomont and Aosta, though these places were still a long way from us. We therefore halted an hour, feasting luxuriously and digesting with divers pipes.

At 2.10 P.M. we started again down the rocks and the mountain-slopes beyond, occasionally crossing a mild torrent, using alpenstocks as leaping-poles. Late though it was for the glorious Alpine flowers, and many as are the places in the Alps famous for a display of their varied beauties, I know few parts so profusely adorned as these slopes. I found *Campanula barbata*, *C. cenisia*, *Gentiana bavarica*, *G. campestris*, *Pedicularis rostrata*, *Geum montanum*, *Aster alpinus*, *Sempervivum alpinum*, *Saxifraga oppositifolia*, *Trifolium alpinum*, *Gnaphalium Leontopodium*.

At 3.30 P.M. we reached the *châlets* of By, and found them inhabited by quite a respectable-looking community; shortly after we struck the track from the Col de Fenêtre, which we followed to Ollomont, where we arrived at 4.20 P.M. From here to Valpelline, which we reached at 5.15 P.M., owing to the workings of the copper mines, the water was much discoloured. At the entrance of the village was a miserable little cabaret, whilst lower down, opposite the foundry, was another, looking a trifle better, and dignified

with the name of the "Hôtel des Mines;" but a traveller must be tired indeed to stop here instead of pushing on to Aosta. The foundry is a large establishment for the melting of the ore brought down from Ollomont, and the draught is supplied by a kind of culvert, carried up the hill-side opposite, instead of by a chimney.

From Valpelline we followed the road on the east side of the valley by Roysan to Aosta. The road was in parts paved with those villanous boulders, so teasing at the close of a *grande course*; but we never halted from the rapid pace at which we had started from the rocks some hours previously, and at 7.15 P.M. walked into Aosta, gladly passed the dirty hotel in the Place Charles Albert, and pushed on to the excellent Hotel de Mont Blanc, conducted by J. Tairraz, on the outskirts of the town.

Here I found Mr. Mathews just come in by the St. Bernard route; but his continued indisposition necessitated a postponement of our purposed expeditions into the Cogne country. Meanwhile, therefore, I filled up the time with a few excursions in the neighbourhood. One of these led Michel and myself up to the top of the Becca di Nona. We remained two hours on the summit, registering the Alpine Club thermometer, taking observations, and enjoying the wondrous view. Looking hence towards the Graffeneire and the Col du Sonadon, and following the line of Carrel's northern panorama, my eye rested beyond Valpelline, on the Mont Gélé, and the Col de Crête Sèche. It seemed to me that I could not do better than investigate those two points; first, because little was known of them, and next, because they were connected with the "High Level" route, and would give me an opportunity of overlooking a great portion of it, and especially the lower part of the Durand glacier.

In returning from the Becca, we left the ordinary track,

and struck out one which is probably little known. We descended into a lower part of the gorge of the Dard, and examined a remarkable group of serrated rocks, run-



NATURAL PILLARS ON THE GORGE OF THE DARD.

ning out in a thin wedge-like form from the bounding ridge on the west side of the valley, at a considerable angle, towards the opposite range. At different points the rocks assumed the form of detached pillars, each surmounted with a capital in the shape of a huge stone, like a *bloc perché*. One of these capitals very strongly resembled the trefoiled head of a churchyard cross. This appearance, coupled with neighbouring objects, indicated the remains of the moraine of a vast glacier, which,

doubtless, at one time filled the entire valley, but which, by subsequent erosion, had become reduced to the thin edge mentioned, and had given place to the gorge of the Dard. The whole forms an interesting example of what are called natural pillars.

With the view of examining the Crête Sèche and Mont Gélé, I left Aosta in the afternoon (Aug. 10th), taking with me the two Croz' and two days' provisions. In a weak moment I was persuaded into taking a trap as far as Valpelline, under the vain idea that we should save time thereby, and so be enabled to get that night as far as Biona. But it was the first time that four wheels had ever traversed that road, and they were just twice as long a time on the journey as we had been in walking the same road when descending from the Col du Sonadon, and Michel, who walked, arrived at Valpelline an hour and a half before Jean and I crawled up in the vehicle. The driver was an absolute cretin, and his horse seemed to share in the deplorable malady, for which this valley has such an unenviable notoriety. At times, we had to lay strong purchase on one side of the crazy vehicle, to prevent its disappearing bodily over the little precipices at the side of the road, the driver all the time huddled up on his seat, as cool as a crevasse, as if upsets were included in the hire of the machine, and with that stolid look of hopeless indifference peculiar to persons affected with cretinism and goître. At intervals the united efforts of the party barely enabled the horse to drag the vehicle out of the little "bergschrunds" worn in the road by rushing torrents, and to which the wheels clung with a tenacity worthy of a better resting-place. Jean was all the time furiously sacré-ing; for, no sooner had he lit his perpetual pipe, than he found all his spare breath was required for one of these hauling processes.

Consequently, when we reached Valpelline, we had to push on, and walk the two hours up the valley to Oyace in one hour and twenty minutes. A viper, darting out from the road-side, fell a victim to Jean's remorseless axe; but, to his disappointment, he could not get at any of the numerous bats which were whizzing round our heads. As we wound up the valley, the gorge below Oyace looked very grand, increased, as the effect was, by the shades of evening giving greater prominence to the bold rock of syenite, on which Oyace is picturesquely situated a great height above the valley, and forming, in fact, a barrier across it.

On arriving at the top of the rock, it was quite dark, and hopeless to reach Biona, or, indeed, any spot beyond Oyace that night; for there was no inn, and soon it would be too late to beg shelter for the night, even at a *châlet*, whose occupants would by that time have retired to rest. Hence we decided to stay at Oyace, and set to work to hunt up the *curé*, and get accommodation from him. This he readily granted, such as it was, and we of course paid him, as usual, when we left the following morning. It is far from my wish to express any want of gratitude to these worthy men, to whom most people who make Alpine expeditions are occasionally indebted for shelter; yet I have great doubts whether the worthy *curé* or his room were the dirtier. I was put to some ingenious contrivances to render myself oblivious of the one and clear from the other, during the meal, which we made from our own stores, and to which we perforce added a quantity of excellent wine, with which the *curé* supplied us at an almost nominal price. Such a thing as milk was not to be obtained in the village; and, as the *curé's* establishment seemed totally innocent of any such effeminate indulgence as fuel, all visions of hot coffee before leaving on the following morning were quickly dissipated.

As I contemplated not only ascending to the Crête Sèche, but also trying to climb the Gélé, and getting back to Aosta the same night, it was necessary to start at a very early hour in the morning. Thus the first two hours, at least, would be before daylight. None of us had been here before, and it would be impossible in the dark to discover the direction to take for the Crête Sèche. It was therefore necessary to take a native with us up the mountain-slopes until daylight allowed us to judge for ourselves. A man was sought out, and we sat in solemn conclave over our pipes with the curé examining the native. Very little was known of the Crête Sèche. He had not crossed it, but was familiar with the mountain-slopes for some height towards the cattle Alp above, and could take us up them in the dark. Of the Gélé, nothing whatever was known, and its ascent ridiculed as an idea too absurd to waste an expression of opinion upon it.

With this cheering result I retired to the curé's bed. I had not seen it, but, judging from other appearances, was not particularly disposed to indulge in any anticipations of a "bed of roses." I ventured, therefore, delicately to hint that I had a particular weakness for hay in the cattle-shed; but he would not hear of it, and thus, not to hurt the good man's feelings, I was compelled to manifest an extreme gratitude for his consideration in surrendering his bed to my use. I marched in smilingly to my doom, though the prospect of a long and hard day's work was not made more encouraging by the more than probability that the two or three hours of previous unrest would be devoted to exasperating conflict with "*mauvaises bêtes*."

I pass over the agonies of that night, and hasten to mention the extreme delight with which, at 1 A.M., I saw Jean enter the little cupboard which the bed and its

hapless victim occupied, and whose roof was too low to admit of my alpenstock standing upright. The first question about the weather satisfactorily answered, Jean brought some fresh water for ablution. I carefully filled therewith the curé's wash-hand basin up to its brim; and so ample were its dimensions that, when I essayed to dip my head in it, the water just covered my nose, as I flattened that useful organ against the bottom of the basin. This fact, coupled with a pungent recollection of the curé, induced the belief that the worthy man was accustomed to save himself all trouble in a morning by simply pointing his face at the basin, and persuading himself it was thereby washed, much in the same way as that ingenious fellow, Pat, does with his herring when he is banqueting upon "roots such as the children of Hibernia eat":—

Each mouthful of mурhy and salt they take,
They point at the herring, a flavour to make;
Thus Pat makes believe he's had herring for dinner:
The fish lasts many days without getting thinner.

Our breakfast was necessarily much on a par with this, as it comprised an ample quantity of "make-believe." At 2 A.M. we started. For about a mile we followed the valley up towards Biona, and then struck to our left, or northwards, up the mountain-slopes. The native who accompanied us seemed to consider that, as it was pitch dark, it was no use being very nice about the nature of the ground, so he took us straight up, stumbling over rocks and plunging through streams in the most reckless manner. Mr. King, in his "Italian Valleys," alludes to existent proofs that this part was once covered with a glacier descending from the Crête Sèche above, which accounts for the roughness of the ground. After two hours of this amusement, streaks in the sky heralded the approach of dawn, and soon after we were blessed with a

magnificent sunrise, gilding the peaks of the Grivola and Ruitor to the south, and of the Mont Faroma and another mountain in the chain eastwards, separating the Valpelline from the Val Tournanche. Shortly afterwards we stumbled upon the remains of a hut, a station of the "*preposés*," at a time when contrabandism was more jealously watched than it is now.

At 5 A.M. we began to feel how excessively unsatisfactory our breakfast of "make-believes" had been; and as we had now reached the foot of the first snow-slope leading to the Col and found water issuing from it, we halted one hour for a more substantial meal. At the request of the native, we did not adopt our usual plan of shying stones at the empty bottles whilst enjoying the post-prandial digestive pipe, but left them for him to pick up in returning. A series of short snow-slopes, interspersed with rocky climbs, and a small half-formed glacier, succeeded. Each group of rocks which we surmounted we thought must be the Col, but, as usual, we found another set still to be mastered. At 7 A.M. we topped the last, and found ourselves on some broad flat slabs of rock, forming the Col de Crête Sèche, 9475 feet high.

It was well defined as a Col, for to the west ran up a ridge of serrated rocks towards the snow-slopes of Mont Gélé beyond, whilst to the east a shorter chain ended in a slope of the Trouma de Boucs. From our feet, northwards, stretched the Glacier de Crête Sèche, or d'Ayas, bordered on the east by the Trouma de Boucs, and on the west by the Pointe d'Ayas, a group of black rock, apparently connected with the Gélé by an impassable arête. Below the bounding ranges the glacier joined the magnificent Glacier de Chermontane, or d'Otemma, running up, north-east, to an immense distance. On the north side of it stood out the Pic d'Otemma. Mr. King rightly con-

jectured that "this pass must be a noble one, considering the splendid view it must afford of the very heart of the glaciers of Chermontane."

We remained on the Col an hour, examining these points of the "High-Level" route, and discussing the best way of attacking the Gélé. Seen from here, it presented two peaks hanging precipitously over the glacier. Between these ran up a magnificent ice couloir, the upper part of which was hidden by a projection of the nearest peak. At first sight, this couloir seemed to offer a possible, though difficult, mode of getting, at any rate, some way up the mountain, but on moving farther round towards the Trouma, we saw that it became impracticable. The only feasible plan appeared to be to follow the ridge to the west, ascend thence to the snow-slopes of the Glacier de la Balme behind the first peak, and then see if we could pass up them to the actual summit.

Dismissing the native, we started along the rocks; but as we were on the side to which the sun had less access, we found them so coated with ice that, after some step-cutting, Michel and I preferred going down to the ice-slope at their base, and cutting our way along it. We soon had enough of this also, so we descended on to the Glacier d'Ayas, though it involved a considerable loss of level; for, after crossing the head of the glacier, we had of course to mount the snow-slope again to our former altitude. Meanwhile Jean continued along the rocks, sending down showers of huge stones, which we had to dodge in the best way we could, hurling up meanwhile anathemas at him, of which he, of course, took not the slightest notice: he certainly had the best of the game. At times we lost sight of him, and could not hear the sound of his axe. He had got so far that he was obliged to go forwards, and hence, notwithstanding our détour, we reached the edge of the snow-field of the Glacier de la Balme as soon as he did.

This we now began to cross, keeping up as much to the north of west as we could. Eventually we rounded the first peak, and saw there was nothing but a huge crevasse cutting us off from the actual summit. This crevasse was a long way above, but we ploughed steadily up towards it. There was no difficulty : it was simply a grind, the snow being deep, and now soft with the sun. On reaching the edge of the crevasse or bergschrund, we followed up its side until we found a practicable snow-bridge, by which we gained its upper lip. A short stiff rise, a few steps cut, and we were on the summit of the Mont Gélé, 11,539 feet high, and, as its name implies, a small dome of ice-coated snow, wreathed up by the wind into a cornice. Twenty feet below us to the east was a group of rocks overhanging the couloir observed from the Col, and supporting the edge of the snow-slope, which, breaking away, displayed a wondrous ice-cavern, glittering in ethereal blue as the melting drops fell from its pendent icicles. On the farther side of the couloir was the first seen peak, whilst on the Col de Fenêtre side, the actual summit on which we were, fell off into a ridge, ending in a third and lower peak.

It was 11 A.M. Scarcely a breath of wind was perceptible, and the sky was without a cloud, and of that intense black-blue colour so peculiarly the property of Alpine regions. We descended to the rocks, and remained there two hours, in enjoyment of the superb view around us. Right in the centre of this wondrous ice-country, and of the "High Level" route, as we were, it was indeed a glorious scene. On either hand the whole Pennine chain from Mont Blanc to Monte Rosa was spread out before us : to tell the numberless well-known peaks and points would be endless. The Graffeneire appeared different from any aspect in which I had previously seen it. Under it lay the Durand glacier, which looked quite as practicable, as

an integral part of the route, as when I had been on its head a few days previously.

Creeping cautiously to the edge of the rocks, they were found to be an absolute precipice overhanging the glacier below. From it stretched up to the north-east the grand Glacier de Chermontane or d'Otemma. Beyond this again rose up the Mont Collon. Mr. Tuckett's previous passage of this glacier, as a part of the route, had established the fact, that there was no such barrier at its head as the Crête à Collon, marked on Studer's map, and the present view confirmed the non-existence of such obstruction, or as Mr. Cowell calls it, Mr. Tuckett's "slaughtered foe."

To the south were the Grivola and other peaks of the Graian Alps, and amongst them, to the east, was a giant, which I made out to be the Grand Paradis.

At noon, with a temperature of 12° Cent., or 53° Fahr., my black-bulb thermometer rose, after three minutes' exposure, to 37° Cent., or 98° Fahr. We built up a well of stones between two of the huge slabs of rock, and covered the aperture with a flat stone, previously depositing therein a minimum thermometer, marked "Alpine Club, No. 384," together with accompanying bottle and register paper, for registry of the thermometer by any future traveller. The requisite notice of its position was posted up at Aosta and other convenient places. When deposited, the actual temperature had risen to 14° Cent., or 57° Fahr.

That this part of the chain is little known may be inferred from the fact, that during the day we saw no less than six different groups of chamois, one herd alone comprising seven of those graceful animals. Whilst we were seated on the rocks, deeply immersed in an attack on the contents of the provision knapsack, three chamois emerged from below on to the top of the couloir. They were not five yards from us when they halted, apparently

quite unconscious of the presence of their enemy, man. It was evident, however, from the nervous motion of eye and nostril, that they had already detected all was not right. They were quickly satisfied on that head; for, before I could restrain Jean and Michel, they were on their legs, hurling down huge stones after the chamois (now rapidly vanishing down the couloir and rocks), and shrieking out yells and whistling, which sounded almost unearthly in the hitherto solemn silence around. Talk about the excitement of the hunter, sportsman, or gorilla capturer — it was nothing to that of these two men at finding their favourite game so unexpectedly close to them. They acted like madmen, and I was half apprehensive that, in their excitement, they would throw themselves over the rocks after the chamois, which we shortly afterwards saw galloping over the glacier below us, and taking the crevasses in the most approved style.

At 1 P.M. we commenced descending rapidly in a south-westwardly direction towards the route to the Col de Fenêtre. Traversing the farther side of the snow-field, and Glacier de la Balme, up which we had ascended, we had an occasional jolly little glissade. The usual rocks, bits of glacier, villanous moraine, and mountain-slopes, succeeded. At 2.30 P.M. we reached the lower part of the Col de Fenêtre, and turned round to look at the Mont Gélé before we left him. This is so well described by Mr. King that I must borrow his description. He says, "The scenery continually increased in wildness and grandeur. On our right, Mont Gélé rose almost perpendicularly, like the face of a rift pyramid, its summit backed up behind by a continuation of the chain, a ridge of savage aiguilles stretching down to Valpelline. On a lofty cornice of this dark range overhung the glacier of La Balme, at a vast height above us, streaming down from behind Mont Gélé

and showing its greater mass inferior, as it is crushed to against the base of the bold granite which rise above it. Another small glacier marks part of the same shelf; and the spectacle presented by the ice, bounded up by the black rugged ridge behind is one of the most singular glacier scenes I ever saw. Much often seen from this point is a whirling gull and few of the minor peaks of the Pennine range can compare with its shape and surely form. And describing its aspect from the Chertoum side he adds: "The face is so sheer a descent from its high summit, that the snow only adheres in thin sheets, so red with the parallel furrows made by falling fragments from above." Professor Forbes also speaks of this side of Mont Oble as "also so steep to bare snow, presenting a perfect ridge of pyramidal alpine summits towards Valpelline."

Turning in the steam we passed the little lake and the chalets de la Balme, joined our former route from the Col du Sion, passed through Châtillon and Valpelline, and taking the lower road reached Aosta at 7.15 p.m. At Valpelline the natives expressed themselves much delighted at our success and safe return, and I left Jean and Michel introducing the event with the usual promises.

On reaching Aosta I was glad to find Mr. Mathews sufficiently recovered to attack the Granit Alps, which we accordingly did the following morning.

and showing its gigantic mass laterally, as it is crushed up against the base of the bold aiguilles which rise above it. Another small glacier shares part of the same shelf; and the spectacle presented by the two, backed up by the black craggy ridge behind, is one of the most singular glacier scenes I ever saw. Mont Gélé, seen from this point, is wonderfully grand, and few of the minor peaks of the Pennine range can compare with its unique and stately form." And, describing its aspect from the Chermontane side, he adds, "The face is so sheer a descent from its cleft summit, that the snow only adheres in frosted sheets, scored with the parallel furrows made by falling fragments from above." Professor Forbes also speaks of this side of Mont Géle as "almost too steep to bear snow, presenting a perfect ridge of pyramidal aiguilles, stretching towards Valpelline."

Putting on the steam, we passed the little lake and the chalets de la Balme, joined our former route from the Col du Sonadon, passed through Ollomont and Valpelline, and taking the lower road reached Aosta at 7.10 P.M. At Valpelline the natives expressed themselves much delighted at our success and safe return, and I left Jean and Michel honouring the event with the usual potations.

On reaching Aosta, I was glad to find Mr. Mathews sufficiently recovered to attack the Graian Alps, which we accordingly did the following morning.

6. COL DE CHERMONTANE, FROM CHERMONTANE TO AROLLA.

BY SIR T. FOWELL BUXTON, Bart., M.A.

THERE are probably few Swiss travellers who have not lamented over the length, the tediousness, the heat, and the dust of the long, dreary valley of the Rhone from Martigny to Visp, and who have not yearned after some more interesting route between Chamounix and Zermatt. With these feelings strong within us, our party, consisting of Mr. J. J. Cowell, my brother Mr. Edward Buxton, and myself, had designed to employ part of a short tour, in 1861, in the working out of a route between these two places that would take us as nearly as possible along the main chain of the Alps. Circumstances, however, compelled us to curtail our plan by that portion of it which lies between Chamounix and the Val des Bagnes.

My brother, who had just ascended Mont Blanc from the Aiguille de Gouté, having met us at Sixt, with us crossed the Mont Buet to Martigny, and reached Chables on the 10th of August. Monday evening, August 12th, found us busy preparing a bivouac on the side of the Glacier de Corbassière, whither we returned on Tuesday, after an unsuccessful attempt on the highest or S. W. peak of the Grand Combin, or Graffenière. Our failure was partly owing to the discouraging nature of our guide, old Bernard Trolliet. His passion for giving up any undertaking when about three parts accomplished

amounted to an absolute monomania; though I must add that he is a careful and attentive man, with a good head for remembering places that he has once visited, while his profession of chamois hunting has given him considerable experience of the neighbouring mountains. However, we were not satisfied in having him as our only local guide. Another misfortune befel us in the illness of our Chammounix porter, and we had only our well-tried and faithful Michel Payot, of Des Bossons, on whom we could depend. Wednesday, however, saw the difficulties cleared away. Mr. Cowell descended the valley to Chables in search of certain creature comforts and other desiderata, among which a new porter or two were indispensable, while my brother and I proceeded to the chalet of Chermontane, a large stone cabin, which contained some dozen shaggy *bergers*. The next morning we sauntered up to the Mont Avril* (11,490 ft.), which well deserves the good character for ease of ascent and magnificence of view given it by Mr. W. Mathews in his paper in the former series of "Peaks, Passes, and Glaciers." From near the top of the Col de Fenêtre we observed a change in the glacier that is worthy of being recorded. Professor Forbes speaks of the glacier that descends from the Col de Fenêtre as one of the great arms of the Glacier de Chermontane; but last year, as far as we can remember, it failed to meet it by an interval of about 200 or 300 yards. Now, Mr. Mathews speaks of the Chermontane Glacier as advancing and ploughing up the pastures in front of it.† Here, therefore, is a remarkable instance of two glaciers close together, the one advancing and the other retreating.

* The heights given are calculated from my own observations on the temperature of boiling water, compared with the barometrical observations at St. Bernard.

† "Peaks, Passes, and Glaciers," 5th edit. p. 72.

As this glacier is on the way from the châlet to the Col, we hope it will receive the attention of future wanderers in the Val des Bagnes.

On descending to the châlet we indulged in a bathe in a bright stream that leapt in a string of tiny waterfalls down the flanks of Mont Avril, and then turned our thoughts to dinner. Near the châlet, and under an overhanging rock, there resided an old sow, who did her best to get fat on whatever might remain after butter, cheese, seracs, and other dainties of châlet life had been extracted from the milk of the herd. She was the happy mother of a large family of sucking pigs, so small that at first we thought them too infantine for the pot; their youthful curiosity, however, led them to examine us with an unpleasant degree of familiarity, an impertinence, on their part, that soon excited us to the chase. Then our opinion of their strength rose rapidly; we found them to be gifted with most extraordinary locomotive powers. Uphill or downhill, over rock or grass, they were for some time a match for us all; surely, selection, whether natural or artificial, never caused a greater difference than that between those piglings and their distant cousins who annually exhibit their fat sides in Baker-street. But the "struggle for existence" was in this case also to end in favour of man. Our efforts were centred upon the *filz aîné*, the biggest of the lot; and having run him down, and pronounced him sufficiently muscular for the food of man, we handed him over to the tender mercies of Payot, who proceeded to prepare him with all due formality for our dinner. An hour later, and Cowell arrived. Much success had attended his arrangements; but the best of all was that he had engaged two capital young porters at Lourtiers, Justin and Louis Fellay, who continued with us for some days, and proved themselves in the highest degree active

and attentive. As night closed in we entered the *châlet*, and betook ourselves to that end of it which had been given up to us. The *bergers* had grouped themselves round the crackling wood fire near the door, and were gently stirring the contents of the huge *marmite*. The portable soup and the little pig were soon ready, and while one log formed our table, and two more our chairs, we enjoyed one of those extra-pleasant hours which often stand out prominently from among the recollections of travelling adventures. Of course we had much to talk about: we discussed old Trolliet, and agreed to get rid of him, entrusting that delicate task to Cowell, who performed it to the admiration of all, with the exception, perhaps, of the subject of it—Trolliet himself. Then the prospects of the morrow, and the chances of a successful ascent of the proposed pass, were discussed. My curiosity concerning it had been chiefly excited by allusions made by Professor Forbes, in his "Tour of Mont Blanc," to the possibility of a pass over the head of the Glacier de Chermontane. From both ends he speaks of it as worthy of examination. The chief difficulty to be anticipated was a mythical ridge of rocks called Crête à Collon. This appears in Studer's map to run right across the head of the glacier, and to form a barrier between the upper *névé*s of the Vuibez and Chermontane glaciers. It had the character of being quite impassable; but, as that easily-spoken epithet is recklessly applied to every place that has not received the honour of a trial, we were not disheartened at hearing it so freely used. Our chief source of encouragement arose from the information contained in two letters from Mr. Tuckett, who had a few weeks before discovered a pass from Chermontane to Prerayen. He had not, however, been to the summit level of the glacier, and we could not but place a certain amount of

unwilling confidence in old Trolliet, who insisted on the reality of the Crête à Collon, and who painted in the blackest colours the dangers to which we should be exposed without him. However, we were determined to try it, even without his aid; so we cut short all further debate by calling Payot, and with him completing the preparations for a start on the morrow. It was still early when each, with his knapsack for a pillow, laid himself down in the black hay at one end of the cabin, while round the fire at the other the *bergers* kept up to a late hour, singing a wild sort of song, the burden of which was the might and the glory of the great Napoleon. It was strange, as we lay in that desolate cabin, with the sky above scarcely hidden by the stony roof, to find that the storms of European politics of half a century ago left their echoes still reverberating in that distant valley.

In spite of their songs and the draughts that played merrily through the frequent interstices of the stone walls, we enjoyed a fair amount of sleep; and at about 2 A.M. the next morning were stirred up by Payot, who was busy making the fire and preparing to boil the chocolate. The difficulty of making a rapid start is one of the most provoking parts of Alpine travel, and is greatly increased when various extras, too hard or too bulky to keep in the pocket at night, have a tendency to secrete themselves in the hay. These causes of delay were, unhappily, not wanting on this the morning of the 16th of August; but at last, at about 3 A.M., we found ourselves fairly under weigh. The morning was fine, but cold; the moon had set, and the stars hardly gave sufficient light to assist us. We had a lantern which was intended to combine all the advantages and none of the disadvantages of others of its kind; but just as we neared the moraine of the glacier, where it was chiefly wanted, it suddenly went out, and left us to

blunder over the loose stones, and slippery mud-covered ice, as best we might. When the moraine was fairly left, and the clean ice was beneath our feet, we at once had amply sufficient light, and soon enjoyed the oft-described charms of an Alpine sunrise. After awhile we were forced by large and frequently recurring crevasses to the south side of the glacier, abutting on the Mont Gélé, and for about half an hour had to take some care in threading our way through the intricacies of the broken ice. The excitement, however, was far from unpleasant, and tended to keep out the cold of the frosty air. We next came to smooth ice, which, however, was crossed at regular intervals by long straight crevasses, just too broad for a jump, and which extended almost entirely across the glacier. These caused some delay, but were at last left behind, and we entered upon as smooth and easy a surface of ice as could well be found. The glacier at this point curves round towards the north-east, and we therefore bore away to the northern bank of the stream. The exceeding ease of our route left us now at leisure to enjoy the scene around, which was one of great grandeur. The view towards the lower end of the glacier was shut in by the steep cliffs of the Mont Gélé and Mont Avril. The northern wall of the glacier, which is the base of the Pic d'Otemma, is too steep for any ice, with the exception of here and there a small secondary glacier, but the southern side was a source of continual enjoyment; it was composed of a succession of headlands, the bays being filled by magnificent lateral glaciers, many of which exhibited cliffs of white névé, scarred by avalanches and crossed by fissures of every size and form. To us, however, the most interesting side was that in front, where the constantly retreating line of the glacier's horizon still kept us in doubt of what we were to find when we reached the top.

Was that gently-rising slope to be cut off by steep precipices? If so, were those precipices practicable? Or was the whole story of the Crête a myth? These were the questions that the day was to answer — this the doubt that gave a sense of adventure and added largely to our enjoyment. At 6 o'clock we halted for breakfast. We had now reached the névé, and, having laid down a strict rule, always to use the rope immediately on reaching névé, however easy and smooth it might look, we proceeded to rope ourselves together. We had, at Cowell's suggestion, adopted a plan which greatly facilitated that often troublesome operation; every one of us had a piece of cord, four or five feet long, tied round his waist, with the ends left dangling at the side. In the long rope we had tied a succession of loops, to which each man could tie himself far more expeditiously than when the main rope has to be adjusted round the waist of each in succession.*

At a quarter to 7 A.M. we started again; the snow was in first-rate condition, and we made rapid progress. The doubt concerning the Crête à Collon still hung over us; for, as we continued to ascend, a ridge of rocks and ice came clearly into view, and looked so near, that for some time we could not but believe that it rose out of the head of the glacier which we were ascending. We were so entirely convinced that it did represent the Crête, that we at last began to consider which of the gaps we should aim at first. It is, perhaps, of but little use to inquire into the origin of popular delusions; but if it is permissible to do so, surely this appearance that now deceived us is very likely to have strengthened, if not to have originated, this old and mischievous bugbear. However this may be, we continued to believe that the barrier in front had to be

* The mode of roping together adopted by the guides in the Ober Engadin is described at page 166.

crossed, till we had nearly reached the summit level of the glacier, when we found that in reality it lay two or three miles away on the opposite or eastern side of the Arolla glacier. Nothing could be of a more opposite character to the expected Crête than the scene that now received us. Before us stretched an extensive plateau of snow, so level as to make it difficult to decide which was the highest point, and yet we were at such a height that we saw to the left the Weisshorn, and to the right some of the mountains of the Valpelline, including possibly the Pic de Zardezan, lying close against the southern shoulder of Mont Collon.

Here at 9 A.M. the guides threw down their knapsacks and nearly an hour was consumed in observing the height (10,417 feet), and taking the bearings of the neighbouring Peaks. This last operation was necessary to enable us to correct our maps, which for the mountains and valleys around were far from accurate.* We were highly gratified at having traversed in six hours the whole length of the glacier, and at having still before us the best part of a brilliant day for dealing with any difficulties that might yet turn up. By the map, the direct route should lie down the Vuibez glacier, enough of which was seen to show us that it was much steeper and more difficult than that by which we had come. About half an hour's walk brought us to the first crevasses; and now we observed immediately on our left a gap through the ridge to the north, of which more presently.

The character of the glacier had now completely changed; at every step of our onward progress, it was becoming steeper and more crevassed. We were, in fact,

* We had not the new sheet No. 22 of the Federal map by Dufour, which has only just been published, and which will supersede all former ones. The maps which illustrate this route are based upon Dufour.

on the edge of the ice cascade that forms so noble a feature in the view from the eastern side of the Arolla glacier. This, however, we could not yet see; and though appearances were against us we determined to descend as far as the state of the ice would permit, in order to reconnoitre the middle and eastern parts of the glacier. The axe was in continual use; but at last our further descent was cut off at the end of a promontory of ice, enclosed between two yawning crevasses. A halt was now called, while telescopes and glasses were energetically brought into play to assist in examining the rocks on both sides for the chance of finding them practicable; but never were crags more black and frowning, especially those which defend the base of Mont Collon, from the very top of which they seem to fall in sheer precipices. The ice, too, was carefully scanned, but every imaginary route that we tried to work out came to grief in a maze of crevasses, or at the edge of towering seracs.*

Among other magnificent sights, none excited more interest than the surface of the Arolla Glacier, straight down upon which we were now looking. It exhibited by far the most beautiful arrangements of dirtbands that I have ever seen. We examined them most carefully, both then, and from the other side on the following day, and came to the conclusion that they certainly owed their existence to the causes explained by Professor Tyndall.† They can only be seen on that portion of the stream which flows from the cascade of the Vuibez Glacier, and are

* The next day we still more accurately examined the fall from the mountains opposite, and came to the conclusion that the descent, at all events, would have been extremely dangerous. It must be remembered, however, that the spring of 1861 was remarkably hot in the Alps, and, therefore, all ice falls more than usually difficult, so that what was true for that year need not be so in ordinary seasons.

† "Glaciers of the Alps," p. 370.

incomparably more distinct than those of the Mer de Glace ; perhaps because the former falls far more abruptly than the latter, and its successive terraces are more clearly defined. However, but a short delay was allowed for looking about us when the right-about-face was given, and we retreated towards the gap on the north, already alluded to ; intending, if that proved impracticable, to make another effort on the eastern side of the Vuibez, and knowing that, at the worst, our early start had left us ample time for reaching the châteaux of Chermontane. The ascent to the gap, about 250 feet, was rather rough, over very loose stones, and a secondary glacier. The first part was very steep, and required some care on the part of those in front to prevent the big stones from falling down on those behind. Having surmounted the steeper part, we turned sharply to the right, where the névé meets the rocks up which we had just climbed. Then a rapid slope, up which we have curved to the left, brought us to the top of the ridge (10,348ft.), just two hours after leaving our halting-place on the highest part of the glacier. The prospect that now opened before us was most encouraging. From the ridge on which we stood the extensive Glacier of Pièce flowed down as far as we could see towards the valley, which joins the Combe de l'Arolla, whose bright green meadows and tiny châteaux were clearly seen, while the horizon was shut in by the noble peaks of the Weisshorn and the distant Oberland. To the south the view was yet grander ; the intensely white snow fields shining out in contrast with the bold black precipices of Mont Collon, and the sun's midday rays glancing from couloirs of ice, as from plates of frosted silver ; while through the blue haze of Italy appeared many a distant peak.

It was a position, which for interest and grandeur of

scenery can be rivalled by few; and which, moreover, had taken us only nine hours to reach, including an hour-and-a-half of rest, and nearly two hours wasted in searching for a passage down the Vuibez glacier. An hour-and-a-quarter were spent at this place in the enjoyment of the view, and another application to our provision bags. While my companions clambered up a peak on the right, to gain a better view of the glacier before us, I boiled a thermometer, and compared our maps with the panorama of valley and mountains around. On their return, we set up a minimum thermometer on a ledge facing the north, about twenty yards to the west of the point where the ridge sinks below the ice. This done, we proceeded again, roped together, sometimes running, and sometimes glissading at a rapid rate down the steep slopes. According to the observation from the peak, the left side of the glacier offered the best route; but several difficulties yet awaited us. In spite of axes, which were freely used, we had, more than once, to return and cut out a path elsewhere. At one part, where the ice was much broken, our route lay alongside a cliff, the radiation from which had hollowed out a sort of chimney, where, with one hand on ice and the other on rock, we found good practice for our climbing powers. At last, the moraine was reached and surmounted, and then an extraordinary scene of desolate rocks displayed itself to our view. It was a perfect wilderness of moraines; six in all lay side by side, while in the midst was the white stream of the Otemma (Studer) or Cijorénove (Federal map) glacier far below us. Here we sat down for a few minutes, and, should any future wanderer care to examine the rocks, his search may, perchance, be rewarded by a pair of green spectacles which my brother left behind him. A steady descent of thirty minutes brought us to the base of the moraine, a

second and ancient one of the Otemma succeeded, and lastly, the modern one led to the ice itself—here about 200 yards broad. This glacier shows unmistakable signs of having suffered unusual diminution. Its northern flank is defended by three mighty ramparts, the outermost of which is well clothed with grass and junipers, while the second is less so, and the youngest has hardly commenced grassing on its outer side. It would present a fine position for a botanist curious to examine the comparative powers of plants for dispersing themselves over fresh ground. Along the base of the last moraine there flows a most refreshing stream, cleansed to brilliant transparency, by filtering through the moraines. The descent for the last hour, in the broiling sun, had been dusty and hot in the extreme, and here was an opportunity not to be wasted; so, about 3 P.M., while the rest of the party proceeded up the opposite side of the valley, to a large dairy establishment, I luxuriated in a delicious bathe, and then threw myself on the soft grass and watched a light-hearted water-ousel as it flitted merrily from rock to rock. The others had intended to return, but, after waiting for them some time, I sauntered up the grassy slope, guided towards the *châlet* by the tinkling of the many bells of the herd. There I found them reclined at length, having sacrificed the bathe to the grosser luxuries of huge bowls of clotted cream and bread, in which I eagerly joined them. The *châlet* was a large one, and offered prospects at least of a good floor of hay; but there was also a whole family of women and children, whose company we did not covet, and, as there yet remained some hours of daylight, we followed the advice of the owner of the Alp, and descended to the valley. He carried a plentiful supply of milk and butter, and led us to his own *châlet*, about half-a-mile from the

lower end of the Arolla glacier. A large basin of portable soup and the remnants of the little pig were ready about sunset, and we retired early to rest in a well-filled hay-loft; and thus completed one of the most interesting and enjoyable of our Alpine excursions.

On the following day we crossed the Col de Collon, and, being en route for Zermatt, had our attention strongly drawn to a snowy Col on the N.E. side of the Pic de Zardezan, at the head of that branch of the Arolla glacier that flows from the east. Sunday, the 18th, was spent in the neighbourhood of Prarayen, and on Monday we crossed to Zermatt, by the Col de Valpelline. Having climbed the cliff of rock, loose stones, and snow, at the head of the Glacier de Zardezan, we again observed a depression through the ridge that runs north from the Pic de Zardezan. Should this correspond with the Col seen from the other side, it would connect the Col de Valpelline with the Col de Collon, and thus the Combe de l'Arolla could be reached from Zermatt in about the same time as Prarayen. To this, or a somewhat similar direct communication between the Combe de l'Arolla and Zermatt, the following allusion in Fröbel's volume* would appear to refer. After describing the Alp and châteaux of Arolla, he repeats the statements of the chief herdsman, or "Pâtor," as to several points connected with the topography of the district, and then proceeds as follows: "The 'Trois Couronnes' are the most remote (*i.e.* southerly) summits of the sharp rocky ridge which separates the valley of Arolla from that of the Ferpêcle Glacier. By traversing the elevated valley which follows the direction of the lower portion of the great Arolla Glacier, it is possible to cross behind this chain to the

* "Reise in die weniger bekannten Thäler auf der Nordseite der Penninischen Alpen." Berlin, 1840; Reimer.

summit of the Glacier de Ferpêcle at the western foot of the Dent d'Erron (Dent d'Hérens or d'Erin), and passing round to the north of that peak, reach Zermatt without ascending a mountain range. This, the Pâtor distinctly asserted, but with the remark that it was not very easy of accomplishment (*'man nicht gut dahin würde gehen können'*). It is to be hoped that the point will be thoroughly cleared up before long, by actual examination, and I hand it over to lovers of topography and mountaineering, as amongst the *agenda* of the coming season.

7. THE COL DE LA REUSE DE L'AROLLA FROM CHERMONTANE TO PRERAYEN,* WITH NOTES ON THE VALPELLINE.

By F. F. TUCKETT, F.R.G.S.

THOSE who are bewailing the all but universal invasion of the railroad with its attendant evils—tourists, long bills, and formality—will be prepared duly to appreciate every still undisturbed nook and corner; and for this, if for no other reason, I feel that I may claim some attention for the little known and utterly unspoilt Valpelline.

Seen by the passing traveller as he descends the southern slopes of the St. Bernard, close to Aosta, and only removed by a few leagues, rocky and snowy ones, it is true, from Zermatt, Evolena, the Val de Bagnes, or the Val Tournanche, the Valpelline yet enjoys a singular immunity from tourists, owing partly to the one wretchedly bad road by which alone it is approachable from the south, and partly to a reputation for savageness and inhospitality, not perhaps wholly undeserved, as far as the commissariat is concerned. Even under this head, however, there is the notable exception of milk, cheese, and honey, whilst nowhere have I met with a heartier welcome or more genuine kindness. The accounts of the district hitherto published are pretty much confined to the interesting descriptions in Professor Forbes' "Travels in the Alps"

* This excursion, similarly to the one narrated by Mr. Hardy, was made from East to West.—ED.

(1st edition, page 272, *et seq.*), and Chapters VII. and VIII. of the Rev. S. W. King's "Italian Valleys of the Pennine Alps," to which I must refer those who are desirous of detailed information, my object being merely to offer a few notes on *châlet* life, with a brief description of one of the links in the recently-forged chain of passes connecting Zermatt with Chamounix. Prerayen at the head of the valley, and not Aosta, must thus be our point of departure.

Placed though the *châlets* of Prerayen are, at a height of between 6000 and 7000 feet*, and apparently in a *cul de sac*, several interesting passes radiate from them as a centre. Commencing from the S., the Pas de Revornea, of which I know nothing, connects them with the Val St. Barthélemy, and more to the E. the Col du Mont Cornière leads in six hours into the Val Tournanche. Next, at the head of the valley, we have the magnificent Col de la Valpelline (11,700 feet) establishing a communication with Zermatt in twelve hours, whilst a slight deviation to the N. will take the traveller, in about the same time, to Evolena, either by the Col des Bouquetins (11,214 feet) between the peak of the same name and the Tête Blanche, or by the Col de la Valpelline and over the ridge (11,900?) E. of the Tête Blanche, in either case descending by the Ferpêcle Glacier. Directly N. lies the Col de Collon (10,269 feet), a grand pass also leading, in ten or eleven hours, into the Eringerthal, and lastly, just to the W. of it, the Reuse de l'Arolla (10,500 feet?), of which more presently, completes the lines of communication by opening up a direct route in six to eight hours to the Val de Bagnes. In addition to all these passes centering at Prerayen itself, there are two others leading into the Val St. Barthélemy, the Passage de Montagnaja

* 6588, Forbes; 6752, Joanne; 6648, Tuckett.

opposite the hamlet of Puillay, and the Col de Vesoney*, from Oyace, and yet two more into the Val de Bagnes, the Crête Sèche (9475 feet) from Biona and the Col de Fenêtre (9141 feet), from Valpelline. Few valleys, therefore, can boast more varied means of ingress or egress.

Let no one who has heard the statement of Professor Forbes, that the establishment at Prerayen formerly belonged to the Jesuits of Aosta, picture to himself a sort of Piedmontese Grande Chartreuse, but let him bring with him contentment, a good appetite, and fine weather, and I venture to engage that he will not be disappointed, especially if he include in the expedition one of the three or four first-class passes just enumerated. Here I first graduated in the great mysteries of milk and its transmutations, and if, as was my case, the traveller is compelled, by stormy weather, to spend a day or two in the neighbourhood, he may here study in perfection the economy of chalet life.

My acquaintance with the Valpelline in general, and Prerayen in particular, dates from 1856. Quitting Aosta on the afternoon of June 14th, we had reached Biona the same evening, making a pleasant call in passing on my friends M. and Mme. Ansermin of Aosta, who have a summer residence at Valpelline. The curé of Biona kindly provided quarters for my companion, Mr. J. H. Fox, and myself, as well as for our guide, Victor Tairraz, whose previous expedition with Professors Forbes and Studer, had familiarised him with the district. The next day was Sunday, and as rain was falling in torrents we gladly accepted our host's invitation to remain till the afternoon. Having engaged a fine-looking, strong, honest fellow, one Ambroise Barrailler, as porter, we strolled up to the chalets before dark, with the intention of crossing the Col de

* King's "Italian Valleys of the Pennine Alps," pp. 184-196.

Collon the following day. The 16th, however, proved hopelessly stormy, rain streamed down in bucketsful, and fresh snow lay on the adjacent summits at a very low level. Appearances were little, if at all, better on the 17th; but once or twice in the course of the day the clouds showed some signs of lifting, and we took advantage of the lull to reconnoitre the Zardezan Glacier with reference to the practicability of effecting a passage to Zermatt in that direction. The flying scud, however, defeated our object, the upper portion of the glacier being only distinguishable at intervals. At last things took a turn, and on the morning of the 18th we effected a start, but even then were doomed to be caught in a blinding snow-storm on gaining the crest of the Col de Collon—not the pleasantest place for such companionship—and were involved in no little perplexity before getting clear of the Arolla Glacier.

In two days' stay, there was, of course, plenty of time to spare. After sundry efforts to indulge in the noble sport of shooting at marmots with a rusty old gun, the lock of which had long ceased to be on speaking terms with the barrel, a bold attempt to extemporise cricket, for which the only existing materials were an axe and a supply of pine logs, and the successful construction of a draught-board out of a piece of blotting-paper, with blocks of black bread, and squares of cheese for the men, we were finally reduced to the systematic study of the all-pervading, all-absorbing milk.

To those who are not familiar with the process of Alpine cheese-making, a few notes jotted down upon the spot may not be unacceptable, and the more so as I hope to direct attention to one preparation which seems to have very generally escaped notice, and thus claim the honour due to him who enriches the world with a dish. The

châlets and the surrounding alp of Prerayen were purchased by the then proprietor for 28,000 francs. He let them out to the actual occupier at a rental of 1200 francs, and had only to keep the buildings in habitable condition and supply the larger utensils. Our host, the tenant, received about 3800 francs for the cheese, butter, and milk, and after paying all expenses, including the hire for three months of a large proportion of the cows, the salary of his assistants, and a certain fixed sum to himself, the amount of which I could not ascertain, netted ordinarily about 200 francs "*bénéfice*."

And now, let me conduct my readers along the pleasant path of daily routine, a true *via lactea*, which it was our privilege to follow during our temporary detention. At 6 A.M., and again about the same hour in the afternoon, the herd was driven into the long shed, at right angles to the main building, and soon that pleasantest of sounds, the musical patter of the milky jets in the frothing pails, fell on the ear in tinkling cadence. Then one after another the lads would issue forth with their brimming vessels, and making for the chalet, pour the contents into the "*marmite*," a large copper vessel or cauldron, holding from twenty to fifty gallons, according to the size of the establishment, and hung upon a sort of movable wooden crane, which can be swung round over the fire, or moved aside as required. Pail follows pail in rapid succession, till the whole produce is collected, and into it is then put a mixture ("*la caille*") composed of "*petit lait*" (the residue after the cheese has been removed) and rennet to curdle it. It is next churned with a stick furnished *en fricandeau*, with a series of projections like the spikes popularly supposed to be appropriate to giant Maul's club, and a separation of the "first curds" or "*caillet*" is the result.

By this time the mixture has begun to lose its natural heat, and is therefore put for a short time over a moderate fire, till it has again acquired rather more than its original temperature. The warmth of the fire coagulates the curds into a mass which is finally extracted by dipping a large cloth beneath it, and after wringing out the contained milk, the white, flabby, rather uninteresting-looking cheese is consigned to a press for further condensing and left to take care of itself. The residue in the cauldron is "*petit lait, première qualité*," and it is with this that we are principally concerned since here are the materials for the compound whose merits I wish to introduce to a larger circle of connoisseurs. More fuel is added and a lively fire maintained. Active ebullition soon takes place, and the "*petit lait*" which had previously assumed a slightly yellow tinge, becomes extremely white on the surface. At this stage a moderate quantity of fresh milk is added which has the effect of still further increasing the extreme purity of the seething mass as it bubbles and swells up. The surface is then skimmed off and under the names, varying with the locality, of "*brousse*," "*brosse*," "*la fleur*," or "*les fleurettes*," is eaten by the herdsmen. I may be prejudiced, but let those who are strangers to this exquisite preparation test its merits for themselves, and if they do not own that it is the most refined embodiment of cow, a perfect liquid pastoral or spiritualised bucolic, then do I greatly fear that there is no such thing left as simple unvitiated taste. Richer than milk, yet lighter than cream, I may perhaps best compare it to the crumb of bread that has been soaked for some time in hot milk in a covered vessel, and I know of nothing more delicious than a brimming wooden bowl of it fresh from the *marmite*, and with pieces of bread shred into it. But we must not forget that we have still to trace the further

transformations of the contents of the cauldron. The next step is to pour into it a sour liquid (composed of "*le second petit lait*," in which some beans tied up in a piece of sacking have been placed, together with certain herbs, such as sorrel, cress, &c.), adding a small quantity of water. This produces "*séracs*" and the "*second petit lait*," a watery liquid usually given to the cows. If the "*séracs*" are poor, and the "*second petit lait*" consequently richer, or rather, less "*maigre*," than usual, a very dry and inferior cheese, a sort of china clay "made easy," is extracted from the latter, just as the original cheese was from the "*premier petit lait*." If butter is to be made, the cream is removed and churned, and the remaining skimmed milk converted into an inferior species of cheese, "*brousse*," and "*séracs*," by a similar process to that already described. "*Séracs*" are not to be despised when quite fresh, though inferior in richness and delicacy to "*brousse*."

Our stay at Prerayen also familiarised us with the use of polenta, the flavour of marmot (anything but a despicable dish, by the bye), and the mysteries of the game of "*morra*," which our hosts incessantly resorted to for amusement; and when I state that after two days and three nights' board and lodging for four persons (the former indeed helped out by certain supplies obtained from Biona), with the free use of the premises, the old Berger, on being presented with a good plain English knife, value fifteenpence, absolutely refused all further compensation, and only after an obstinate resistance at length accepted ten francs, it will at least be conceded that we might have made a less profitable investment both of time and money.

With such reminiscences of Prerayen I had looked forward with pleasure to revisiting it at some future time,

and Mr. Jacomb having in 1860 effected a passage thence to Zermatt, by the Glaciers of Zardezan and Zmutt, I took advantage of a fine day in 1861, and reversing his route, crossed the Col de la Valpelline from E. to W., and at 2 P.M. on the 25th of June, after about twelve hours' walk, found myself once more in my old quarters at Prerayen, in company with Messrs. C. H. and W. F. Fox, the well-known J. J. Bennen of Laax, and cheery, steady, Peter Perrn of Zermatt. Halting first at the upper châteaux where we had taken up our quarters in 1856, we found them as yet unoccupied; but cows were visible lower down the valley, and thus all uncertainty as to the alp being tenanted was at once agreeably dispelled. Another quarter of an hour and we were in the midst of all the sounds, sights, and smells of pastoral life, and received from the head herdsman (not my friend of former times) a hearty welcome, and permission to make ourselves at home. We at once installed ourselves on a grassy knoll, where, discarding boots, and spreading out our wet socks to dry, we revelled in the warm sunshine and refreshing breeze. The next hour passed in a series of introductions unsolicited on our part, to almost every member of the dairy establishment, numbering upwards of a hundred cows and calves, and nearly as many goats, who insisted upon becoming personally acquainted with us and our belongings. Thus, in friendly though mute greetings, free libations of delicious milk, discussion of plans, and the examination of maps and instruments, time flew rapidly by, and my companions, delighted with this their first experience of genuine châlet life, helped me to do nothing with the most persevering assiduity.

It had been our intention to cross the Col de Collon, partially to descend the Glacier d'Arolla on the northern side of the pass, and then, striking off to the left up the

Vuibez Glacier, force a passage over the so-called Crête à Collon, and gain the head of the Val de Bagnes by the Glacier of Chermontane or Otemma. An inspection of Studer's map, however, showed a small glacier called the Reuse de l'Arolla, (*Reuse* having probably the same signification as *Ruise* or glacier) coming down a little to the S.W. of Mount Collon, and occupying in fact the N. W. angle of the Combe d'Oren, just at the point where, turning to the eastwards, it runs up towards the Col de Collon. To those going northward from Prerayen the Reuse de l'Arolla ought therefore to be visible immediately in front at the head of the Combe, but so faint was Studer's indication that I confess I felt some doubt whether it was a glacier at all. The question was of importance, as, if a passage could be effected in this quarter to the upper portion of either the Chermontane or Vuibez Glacier, the long détour by the Col de Collon would be avoided. Accordingly between 5 and 6 P.M. we started, on a tour of observation, for the Combe d'Oren, and it was with that thrill of pleasure which the genuine explorer must always feel at the solution of some knotty topographical question, that, as we topped the steep ascent from the châteaux, the accuracy of the map was at once established. There was the glacier with an apparent col at its head, and though the torn and riven mass of ice appeared to descend too precipitously at its lower extremity to admit of an attack in front, the rocks on its left or eastern bank seemed to offer the means of gaining the more level plateau above.*

* Professor Forbes ("Travels in the Alps," 1st edit. p. 278) describing his departure for the Col de Collon, has clearly seized on the topographical relations of this district. He says, "We passed some wretched shepherds' huts, and following an impetuous stream, we came to the foot of a glacier descending on our left, which has blockaded the valley with its prodigious moraine, and left a marshy flat above. This passed, we kept to our right

Well satisfied with the result of our stroll, we returned to the châteaux, where we found no less a person than the Syndic of Valpelline, just starting with a mule for the lower part of the valley. Here was another piece of good fortune, as we should otherwise have had to engage some one to carry our knapsacks to Valpelline and deposit them at M. Ansermin's; but our new friend willingly undertook the commission for a "consideration" by no means proportional to his local dignity. Having been astir since midnight, prudence counselled an early retreat to the hayloft; but the *brousse* was irresistible, and though not yet prepared, would certainly be ready in "*un petit quart d'heure*." This "*quart d'heure*" proved a good hour, but we were not to be balked of our feast, and so it was not till nine o'clock that we wished our friends good night, and provided with a bucket of milk, a tin case of ground coffee, and a supply of firewood, proceeded to our night-quarters at the upper châtlet. Some further time was spent in arranging everything for an early start in the morning, but at length about 9.30 we all turned in upon our hay, and slept as best we could. One hour, however, gained in the morning, is worth two later in the day, and at 1.45 A.M. of the 26th we were again stirring. The moon shone brilliantly, and everything boded well, as far as weather was concerned. We at once set to work to prepare breakfast, and I shall not soon forget the lighting of the fire, preparatory to

hand, having in front of us another great glacier which descends from the Col de Collon, and *more to the left a great and steep glacier which appears to descend from the group of mountains connected with the origin of the Glacier de Chermontane.*" This last is the Reuse de l'Arolla of Studer's map, which I may here remark gives a better idea of the terrain than the recently published sheet (Blatt 22) of the great Federal Survey, owing probably to the fact that lying S. of the Swiss frontier, the engineers bestowed less care on it.

brewing some hot tea and coffee, which are always such an excellent preliminary to an early start. The wood would not catch, and, to make matters worse, just as I had coaxed a baby flame into being, one of the party in an excess of zeal and enthusiasm heaped upon the poor struggling innocent a mass of dry hay, whereupon the spirit of the flame summoned the spirit of smoke, and the little kitchen was soon filled with dense and pungent fumes. All but Bennen and I fled, and at length even he was compelled to beat a retreat as his eyes are naturally rather weak. I stuck to my post, however, with streaming eyes, and sooty face, and was at length rewarded by complete success. A bucket of hot milk and coffee was soon disposed of; and with the inner man much comforted, we started for Chermontane, in glorious moonlight, at three o'clock, just as the first faint indications of daylight were stealing over the loftier summits.

As our progress for the first hour or two was devoid of incident, and the way was along the usual path leading up the Combe d'Oren to the Col de Collon, I will not dwell upon it here. Suffice it to say that about half-past four we found ourselves at the foot of the steep moraine bounding the lower part of the Reuse de l'Arolla on the E., and proceeding straight up it parallel to, and at a short distance only from, the ice, soon reached the base of the ridge of rocks over which we hoped to gain the upper plateau of the glacier. These presented no difficulty, but there was just enough of excitement in the scramble to warm us, and render a halt on the summit at 5.45 A.M. a very pleasant arrangement. The provision-sack was opened, and in brilliant sunshine, beneath a cloudless sky, and with appetites sharpened by exercise and the frosty morning air, we established ourselves beside a sparkling runnel of delicious water, and feasted right royally.

Soon after six we were once more under weigh, and in a few minutes entered upon the upper plateau of the glacier. The snow was in excellent order, frozen hard; our progress was rapid, and after three quarters of an hour of gentle ascent we stood at the foot of a second rocky ridge, rather precipitous though of no great height, which alone separated us from the col. The climb was a sharp one for a few minutes, and a good deal of loosely attached snow, which gave way when trodden on, was just sufficiently troublesome to add to the interest. We encountered, however, no serious obstacle, and at seven o'clock stood upon the summit of the Reuse de l'Arolla.

Before us, to the N., opened out a very extensive and most magnificent glacier basin, from which we were separated by a steepish snow wall, traversed by an ugly-looking bergschrund. Almost immediately in front was a peak which appeared to correspond with the Pigno de l'Arolla (12,471 feet), whilst right and left a gap of great width occurred in the eastern and western boundaries of the basin. We could not clearly identify the Mont Collon (S.W. peak 12,264; N. peak 11,956 feet), but it must have been at no great distance to our right in a north-easterly direction, though probably concealed by an intervening ridge. It was quite clear that our course would lie round to the left, through the western gap already alluded to, and beyond which, relying on Studer, I expected to find the "Crête à Collon." Guided by the same authority, backed in this instance by general report, my first hasty but natural conclusion was, that we were looking on the upper plateau or névé of the Vuïbez Glacier, which doubtless discharged itself through the eastern gap, and was bounded to the W. by the "Crête" itself. A more attentive examination, however, showed that the glacier intersecting and fed by the basin, con-

tinued to rise to the E., clearly pointing to the conclusion that it must discharge itself in an opposite or westerly direction. But in this case, what was the nature of the mysterious Crête à Collon? It could not be a ridge, or it would bar the downward progress of the ice, but it might possibly be an impassable cataract of séracs, bordered by rocks so precipitous that descent would be impossible. A very short time would, however, solve the question, and if forced to beat a retreat, we had plenty of daylight before us; so doubts were at once dismissed, eggs, bread, and honey produced, and a mountain sympiesometer by Casella set up for an observation. There is an evident error in the reading of this instrument, but availing myself of a correction obtained on the previous day, I have reason to believe that the height of the Col is not less than 10,500 feet.

At 7.50 A.M., all carefully roped together, we commenced the descent; but having cut our way to the upper edge of the bergschrund, it appeared to be impracticable, at least at the point we had reached, and we had therefore to work our way along it for some distance to the right. A snow-bridge was, however, discovered, the passage was easily effected, and we were soon running rapidly down the lateral glacier, which descends from the ridge we had quitted and joins at right angles the trunk stream, whose eastern and western branches we were opening up at every step. At length we stood at the edge of the main glacier, here covered with snow, and in a moment all our doubts were dispelled, as the broad expanse of the Otemma or Chermontane Glacier was seen stretching away E. and W. for many a mile before us. In the former direction, it rose for perhaps a mile to what was clearly also the summit-level or ice-shed of the Vuibez Glacier, as has since been proved by Sir T. Fowell Buxton's party.

To the W. an immense ice-stream, innocent of any such abomination as the Crête, sloped gently but grandly downwards, the noble mass of the Grand Combin rising above the northern boundary of its lower extremity. This was indeed a pleasant surprise. The "Crête" had long been a bugbear, and it was with no little satisfaction that I was able to establish its mythical character. It may perhaps be asked what could have led to the report of its existence, and the following are the only suggestions I can offer.— It will be seen, both by Studer's and the more recent Federal map, that the course of the Otemma or Chermon-tane Glacier is a curve whose convexity is turned to the S., the direction changing from S.W. in the upper portion, to nearly N.W. towards the lower extremity. Now, to a person looking up it from the head of the Val de Bagnes, the rocky ridge which forms the western boundary of the Col de la Reuse de l'Arolla, and juts out at right angles towards the trunk glacier, appears to extend across the latter, and certainly does look very precipitous and forbidding; just as from the pathway to the Flégère the mass of the Tacul and the Grandes Jorasses appears to bar further progress up the Mer de Glace, till, on attaining a greater elevation, the western gap is disclosed, through which the affluent of the Géant descends. The information which my friend Mr. Mathews received from Bernard Trolliet*, if not absolutely devoid of foundation, must either have referred to one of the lateral summits,

* "As for the Glacier de Chermontane, the head of it was absolutely 'barred'; he had once followed a *chamois* to the top of the Pic d'Otemma, and examined the Crête à Collon, and, we might take his word for it, we could not get across. I do not consider Trolliet's opinion as absolutely decisive against the Crête à Collon, and I shall certainly attempt it if ever I again visit this locality. A place must be actually tried before it can be pronounced impassable." (See "Peaks, Passes, and Glaciers," 1st series, 1st edit. p. 104.)

such as that just alluded to, or may have been only intended to apply to the descent of the Glacier de Vuibez on the other side, which the Buxtons and Cowell found so formidable, that they took to the rocks in preference, and got down into the Eringerthal further to the N. by the Glaciers of Pièce and Cijorénove (the Otemma of Studer's map).

I know few more magnificent ice-streams than this of the Chermontane, fed by numerous lateral tributaries and bounded by noble summits, of which the principal are the Pic d'Otemma (11,513 feet) and Pigno de l'Arolla (12,471 feet), on the N., and the Trumma de Boucs (11,149 feet), and Mont Gelé (11,539 feet) on the S., whilst to the W., across the head of the Val de Bagnes, rise the Grand Combin (14,164 feet), and Mont Avril (10,961 feet), faced in the opposite direction by the Mont Collon (12,264 and 11,956 feet). Its breadth averages three-quarters of a mile, and its length, according to the Federal map, and judging from the time it took us to descend its gently-inclined and uniform surface, cannot be less than six miles. Our progress was necessarily slow, as the snow which lay deeply on the upper and central portions was, even at this early hour, thoroughly softened and saturated with moisture, and the intense heat of the sun's rays produced a drowsy sensation difficult to shake off. Bennen, who had been unable to sleep much in the hayloft, was once or twice so overcome as to lose all consciousness and flounder about in the most ludicrous manner, but a few sniffs of aromatic vinegar soon roused him again, and he joined heartily in the laugh against himself. At 9.50 A.M., having reached a bare patch of ice, we halted for lunch, after which Bennen and Perrn indulged in a nap, whilst we made notes and looked about. Up to this time the day had been brilliant, but now various unmistakable

movements amongst masses of cloud that sailed up from the S. and W., showed that a change was impending, so rousing our sleeping companions, we proceeded on our way a little before eleven. Nothing worthy of note occurred till we reached the brow of the ice-cascade at the lower extremity of the glacier, where it became a question which side we should select for the descent. We finally decided on the right or N. bank; and quitting the ice at the S.W. foot of the Pic d'Otemma, scrambled down the rocks to the lower and level portion of the glacier, which we crossed diagonally to the foot of the Col de Fenêtre. For those who intend to descend the Val de Bagnes, this is undoubtedly the best course, but if the Fenêtre de Chermontane be the traveller's aim, let him keep down the S. side where the ice is least crevassed, and join the route from the Col de Crête Sèche, rather to the N.W. of the Trumma de Boucs, and beneath the slopes of Mont Gelé. We were not previously aware of this, and lost at least half an hour in forcing a passage through some ugly séracs, and then down the rocks on the N. side.

It was 7.50 A.M. when we quitted the Col, and the level of the valley at the foot of the Col de Fenêtre was reached at 12.35 P.M., but more than an hour had been devoted to our halt, and nearly another was consumed in crossing the bergschrund, and reconnoitring the ice-fall, which would reduce the actual walking-time to rather less than three hours.

It had been our intention to take up our quarters in the highest available châteaux of the Val des Bagnes, and attempt in the morning the passage of the Glacier de Durand, which has since been effected by the Rev. J. F. Hardy; but, as already stated, the weather had belied the promise of the morning, clouds were hurrying up the valley, and the Grand Combin, shrouding its head in mists, disclosed

ony black, frowning precipices, looming like some gigantic fortification through the momentarily increasing obscurity. Rain soon began to fall; it was only too evident that we were going to have dirty weather, and there was every appearance of a disturbance of some days' duration. Under such circumstances, the head of the Val de Bagnes, to which the cattle had not yet mounted, was not perhaps the most agreeable spot that could be selected, especially when, by way of contrast, at only a few hours' distance, the comfortable Hôtel du Mont Blanc at Aosta, looked irresistibly tempting. A short consultation was held, and Southward Ho! was the unanimous vote.

After ascending the lower slopes of the Col de Fenêtre, we halted at 1.45 P.M. to dine; but thick driving rain coming on, we broke up our encampment, and at 2.30 again pushed forward, reaching the crest of the pass (9141 feet) at 3, and the châtelets of Ollomont on the southern side at 4.15. By this time we were in rather a dripping condition, the rain came down in streams, and peal after peal of thunder rattled amongst the hills. One of my companions proposed that we should halt here for the night, but the place was so draughty and crowded, and we were so wet, with no means of changing, whilst dry clothes awaited us at Valpelline, that he most good-humouredly gave in when I urged that we should probably meet with some sort of conveyance to take us down to Aosta, and at any rate were quite sure of a hospitable reception from Mme. Ansermin, if we could get no further that night. So, after a sort of stirrup-cup, or rather parting bowl, of *brousse*, and a chat over the fire, we sallied forth to do battle with the storm.

Every little stream, ordinarily meek and retiring, was now swollen with rage and bursting its banks with pride; cascades leaped down from every rock, little plots of

meadow became bogs, and the rain appeared at times to descend in sheets. Still on we went, running the gauntlet of streams, bogs, and water, there being nothing for it but to proceed. At length, as we reached the lower level of the beautiful valley, there were signs of a lift in the thick, murky pall that hung over us, and by the time we reached Valpelline, at 6.30, the rain had ceased entirely.

We soon found our knapsacks, and ferreted out a cart with one mule in which the owner offered to convey us to Aosta,— vehicle, beast, and road permitting. Meanwhile, we took advantage of the time occupied in harnessing, to call on Madame Ansermin. Of course she was the same kind, motherly, hospitable lady, whom all who have the pleasure of her acquaintance must at once recall on the mention of her name, and all sorts of hearty offers of help in any and every way were at once pressed upon us. We, however, declined to accept the proffered quarters for the night, greatly to Madame's vexation; but at length compromised matters by saying we would gladly be allowed the use of a room to change our wet clothes in, and then come and have a glass of wine with her. Well! as we liked; if we would not do as she wished and stay the night, we should have our own way, but we must try to come back and see her again. On reappearing in our clean outfit, a huge light sponge-cake, as large as a tea-tray, was set before us, together with wine, honey, cheese, and bread in abundance, and we were literally crammed with eatables and drinkables, our kind hostess standing by and filling up every pause in eating or drinking with a fresh slice or "*encore une goutte seulement.*" At length, but not without great difficulty, we tore ourselves away, and at eight entered our nondescript rattletrap. I was sorry to find that its size was so limited as to render it doubtful whether Bennen and Perrn could get seats; but as we were not

likely to exceed a foot-pace, they gallantly insisted on walking, and were rewarded by having much the best of it.

Of our ride my descriptive powers are utterly inadequate to give the faintest idea. The mule was slow, the cart small and springless, the road little better than a track, and all three of us feeling desperately sleepy after two short nights. C., who sat at the tail, soon began to doze, and for some time his ludicrous contortions kept W. and me in such a perpetual state of laughter that, as long as daylight lasted, we managed to keep awake. During the first half hour, he lost his hat three times; and to prevent his following it in person, we had to buckle him up to the seat with a leather strap. At length our turn came, and after many ineffectual struggles, I found myself flat on the bottom of our vehicle with my knees up to my chin, whilst W.'s head and body had disappeared somewhere in the region of the mule's tail, his legs only still bearing mine company. At this stage I became utterly oblivious; and when I next roused, discovered to my surprise that I was alone. I learnt afterwards that the tremendous jolting had proved too much for my companions, and that they had accordingly proceeded on foot, basely leaving me to my fate, and speculating as to what my condition would be if I ever should happen to turn up at Aosta. A little after eleven, however, I made my appearance; and never was change more welcome than when I stepped from the instrument of torture and sat down to some hot coffee and *gressins* in the *salle-à-manger* of my old friend, Jean Tairraz.

8. THE COL DE LA VALPELLINE, FROM PRERAYEN TO ZERMATT; INCLUDING THE COL COURGNIER OR DU MONT CORNIÈRE, AND ASCENTS OF THE CHÂTEAU DES DAMES AND TÊTE BLANCHE MOUNTAINS.

BY FREDERICK WILLIAM JACOMB.

UP to the time of the discovery of this Col, travellers passing from Zermatt to Aosta had two routes open to them. The first was by the St. Théodule Pass and Val Tournanche, with an alternative course (after crossing the St. Théodule) from the Val Tournanche over the intervening ridge, westwards, into the Valpelline—in either case a long way round. The second was by the Col d'Erin to Evolena, and thence, in a second long day's work, either by the Col de Collon or by the Col du Mont Rouge, the Valpelline. This route was frequently preferred, as it afforded two fine glacier expeditions. It involved, however, a long *détour*—along the two sides of the triangle, instead of the direct line by its base.

In the course of a series of expeditions, principally around Zermatt, in the season of 1860, during the earlier portion of which I was accompanied by my friend Mr. John Fisher, of St. John's College, Cambridge, I had been struck with the manifest indirectness of these routes to the Valpelline. It seemed to me that, if a passage could be made direct to Prerayen along the base of the triangle, and in one day instead of two, not only would the facility of access to the Chamounix district be sensibly improved, but the first link in the chain of an entirely new route satisfactorily forged.

Accordingly, when crossing the Col d'Erin, I had examined with the glass, as narrowly as was then practicable, the ice-fall and snow-field to the south of the Tête Blanche, and leading up towards the Col which I proposed opening out, and they did not seem to me to present insuperable difficulties. What obstacles might exist on the further side, in the snow-fields of the Zardezan glacier, it was impossible to foresee; for, being untrodden, nothing was known of them. Professor Forbes, in his "Travels through the Alps," says, in reference to this district, "It is, perhaps, only in this part of the Alps that such a prodigious extent of comparative table-lands of snow are to be found at such an elevation." It occurred to me, however, that, if I could attain some high point in the chain running southwards from the Matterhorn and the Dent d'Erin (or Dent d'Hérens, though Studer's map calls it Dent de Rong), I should be able to see somewhat of the Zardezan side of the contemplated Col, and be better enabled to judge of the nature and direction of the glacier and snow-fields which I should have to traverse, and of the practicability of effecting a passage.

In order to carry out this idea, I proposed, after crossing the St. Théodule Pass to Breuil, in the Val Tournanche, to go thence, over the chain, between that valley and the Valpelline, to Prerayen, ascending *en route* the mountain known as the Château des Dames. This chain and mountain are alluded to both by Mr. King, in his "Italian Valleys of the Alps," and by M. Le Chanoir Carrel, of Aosta, in his "Panorama of the Alps." Mr. King mentions a report of the existence of a pass between Breuil and Prerayen, but adds that it is steep and difficult, and that he could gain no information about it, save that it passes under Mont Cornière, and round the flank of the Château des Dames. The mountain he describes, as he

saw it from Breuil, as "one of the loftiest points in the ridge, and a smooth dome of snow, out of which rise some singular bare rocks; and they certainly had a remarkable resemblance to ladies marching up the snow to an Alpine castle;" whence it is supposed the name arose. M. Carrel describes the mountain thus:—" *Cette gracieuse sommité barre à l'est, la vallée de Bionaz. Elle est entre les hauts pâturages des châlets de Prarayé, au sommet de dite vallée, et ceux des Volpighies à Valtornanche. Il en descend de beaux et bruyants glaciers;*" and in a subsequent passage he again testifies to its grandeur, by alluding to its glaciers as the source of the impetuous river Buthier. In the panoramic view of the chain attached to his book, the mountain, grand though I certainly found it to be, assumes, I think, a greater prominence than is justly its due. This I was enabled, I believe, satisfactorily to explain to him during the season of 1861, when, in a singular rencontre, I made the acquaintance of this eminent mountaineer, *littérateur*, and scientific investigator.

Professor Forbes also, whilst not mentioning the Château itself, alludes to the lofty chain of mountains forming this ridge, "over which he afterwards learned that a passage might be effected, though not without difficulty." At the time, however, of the expedition which I am now describing, I was unaware of the remarks of himself, of Mr. King, or of M. Carrel, on the subject, and had been simply led to the selection of this mountain as the base of my operations, from having seen it in the panoramic view. The description given by those gentlemen is, however, so accurate, that I regret that the absence of all previous knowledge of their observations, deprived me of so much additional pleasure in attacking the mountain.

I crossed the St. Théodule Pass on the 10th August, 1860, taking with me Johann Kronig of Zermatt, who,

with Peter Taugwald of the same place, and Franz Andermatten of Saas, had shared in my expeditions of that season. We fought our way over the Théodule in a heavy snow-storm and one of those bitterly cold north winds for which the Monte Rosa district has such an unenviable notoriety. On reaching the comfortable inn at Breuil, I inquired if there were any passage across the ridge to Prerayen by which I might approach the Château des Dames, so as to ascend it *en route*. I learnt that there was a Col, called the Courgnier, and that its track passed near the Château, but that it was very rarely used. Hence there was an additional reason for now crossing it; for, besides its contributing to the main object of the expedition—the new passage to Zermatt—it would enable me to see something of a district but little known. As to the Château, I was informed that it had never been ascended—was inaccessible—madness to attempt it—and so forth. The old, old story. Of course, the fact of its not having been previously ascended was quite sufficient to decide any Alpine explorer to attack it, so I immediately asked for an additional porter. Kronig and I had sufficient reliance on each other, from former wanderings, not to care for further assistance in merely trying a mountain like this. There was, however, no accommodation then at Prerayen, at which place it would be necessary to pass the night in hay. We must also be prepared to camp out, if required, further on; and we must take with us provisions for the three days which would doubtless be occupied in getting to Prerayen, and thence effecting the pass to Zermatt. An additional pair of legs to carry the provender, &c., was therefore not a choice, but a necessity. Only one native presented himself; but neither from his appearance, nor from the examination to which he was subjected, was I satisfied with his general qualifications. He professed to

know something of the Col Courgnier, and assured us that we should obtain at Prerayen milk, cheese, butter, bread, and perhaps an egg or two ; but inasmuch as those luxuries were not forthcoming when we arrived here, and as he led us wrong in descending the Col, I have great doubts whether he had ever previously been across. Eventually, as will be seen, he proved worse than useless,—indeed, a positive encumbrance, for he, of course, consumed his share of the provisions, of which we afterwards stood much in need. We were, however, in the onset, in happy ignorance that he possessed these additional qualifications as a guide. Discouraging as his examination had proved, we concluded he might at any rate be useful in carrying the provisions, and, as no one else would undertake the expedition, I was compelled to take him, despite my doubts. As a warning to future travellers, I gibbet him, by adding that his name was Maquigney Gabriel, or Gabriel Maquigney, if we discard the plan usually adopted in the Alps of inverting the Christian and surname.

At 5 A.M. the following day, August 11th, we started from Breuil in splendid weather, and in the enjoyment of a glorious view of the Matterhorn, Dent d'Erin, Breithorn, and other peaks around. Descending the valley towards Val Tournanche for a mile or so, we crossed the stream, and ascended the slopes bordering its western side towards a gap in the bounding mountains. Turning the gap, we entered a kind of basin, from which ran a valley down the chain southwards, and, in fact, dividing it into two parallel ranges. Winding round the head of this basin, on the north, we crossed the further ridge, and, keeping high up under its edge, came to a group of rocks at the foot of the Château des Dames. At this point we halted for the usual second breakfast, and, leaving there the rest of our

baggage, save a provision knapsack, which we retained for use on the top, we ascended straight up a steep snow-slope forming the base of the mountain, and in a north-east direction. A strongly-defined track in the snow was shortly explained by five chamois bounding from the rocks at the further side of the slope, within easy shot, and passing up before us. It was a tolerably good proof that the course which we were taking would enable us to get at least some height up the mountain, however we might afterwards fail to attain its peak.

On reaching the top of the slope, we found that a line of serrated rocks ran up northwards towards the head of the mountain, which was, however, concealed by intervening crags. Just as we topped the ridge, our friends, the chamois, who had been evidently waiting for us to follow them up, galloped down a snow-field to the east, and were soon out of sight. We ploughed up another slope, where the fresh fallen snow lay very deep, owing to the storm of the previous day, and the bad weather, for which the season of 1860 in the Alps will be long remembered, causing, as it did, the failure of so many expeditions. The toil inflicted by the depth of snow was, of course, now very much increased by the softening influence of the sun's rays, and we were continually plunging forwards into the usual little crevasses. The slope led us to some rocks above, very loose and *pourris*, through, under, and over which we wound for a long time, always steeply ascending. We hoped that each little peak which we attacked would be the last, but invariably found another rising beyond. At times we encountered parts which we could not climb. In such cases we had to descend to the steep and dangerous ice-slope below, and cut our way along, with the axe, as close to the rocks as possible, for, a few yards lower down, the slope fell off

very sharply, and ended in a precipice. In one of these little interludes we had a foreshadowing of our fate if we slipped too far; I missed my footing, and, in the effort to recover myself, my alpenstock, tried companion of many glorious Alpine expeditions, escaped from my grasp and slid away. At the prospect of its loss I could not refrain from uttering a mild exclamation. This, in the solemn stillness around, seemed somewhat unearthly, and so startled Gabriel, who was creeping up below us in an agony of fright, that he thought it the correct thing to follow suit with a loud cry, which very nearly destroyed the precarious balance afforded by his tottering limbs, in which case he would have toppled over after the alpenstock. To my intense delight, it buried itself in a little snow hummock below, which its weight did not disturb, but which would not have stayed our destruction if slipping down. In order to recover the priceless friend, and at the same time infuse into Gabriel a little of that confidence and pluck which was becoming necessary, we carefully let him down to the hummock by means of the rope. Cautiously he grasped the alpenstock, and we hauled him up in triumph. Shortly afterwards, one of those real dangers of Alpine exploration, a falling rock, whizzed close past my head in a highly unpleasant manner.

At length the rocks ended, and we gladly saw the top of the mountain not very high above us. But we found ourselves separated from it by one of those awkward places called an *arête blanche*, a ridge of snow, just broad enough for the foot, with a frightfully steep slope downwards on one hand, and, on the other, a precipice of untold depth. Over this, the ridge, wreathed up by the wind, hangs in a narrow ledge or cornice, through which the traveller may drive the alpenstock, and see space below as he walks along. These are the places which

frequently stop explorations if the wind is up: a sudden puff might shift the centre of gravity. Fortunately the day was magnificent, and scarcely a breath of air stirring; so, with care, we eventually got along the *arête*, and up a short snow-slope beyond. It landed us on the top of the Château des Dames, consisting of a little ridge of rock, on which the snow could not hold, but appeared to be wasted away almost as fast as it fell; we collected its melting drops to mix with our wine. But, first, we feasted on the splendid scene around us, increased as the enjoyment of it was by the pleasure which Alpine explorers feel on attaining the summit of a high mountain. Owing to its central position, the mountain commanded an extensive view, especially westwards, in which direction the eye enfiladed a line of snowy peaks, for nearly fifty miles away, towards Mont Blanc himself. Amongst these were the Vêlan and Graffeneire; and nearer the Mont Gelé, Otemma, Arolla, Collon, and others, of which little was then known. To the south, near at hand, rose out from the ridge a snowy cone, probably the Mont Gelé referred to by Mr. King. It was, of course, not the Mont Gelé just mentioned, in the main chain, on the further side of the Valpelline, and the ascent of which has been described.

But our principal satisfaction consisted in the fact, that the position, as expected, afforded us a view over the morrow's work. Right in front of us, towards the north, stretched up from Prerayen the great and unknown Zardezan glacier, hemmed in on the west by an almost unbroken line of precipices extending from the Pointe de Zardezan to the Dents des Bouquetins, whilst on the east several huge glaciers from the Dent d'Erin streamed into the Zardezan at right angles. Far away up the glacier we could see a tremendous ice-fall and system of crevasses, which made it more than doubtful whether we could force

the passage in that direction on to the snow-field beyond, leading to the Col by which I hoped to reach Zermatt. The east side of the ice-fall was bounded by a mass of rocks, interspersed with couloirs and snow-slopes, and the height of our position enabled us to see so far up these, that we conceived we might scale these rocks to the *névé* above, if the ice-cliffs in the glacier proved impracticable. All these points were carefully noted. In assailing new ground, it is obvious that the chances of success are increased by a previous recognisance; and though it is not every one who would ascend a high peak for such a purpose, yet the wisdom of that course was now plainly apparent, and became more so when on the glacier itself the following day. The object contemplated in hunting up and ascending the vantage ground upon which we now stood had, therefore, been perfectly successful. We had no efficient apparatus with which to ascertain the exact height of the peak, and could only make a rough estimate that it was something less than 12,000 feet.

The provision knapsack now claimed attention. The empty bottles were sent spinning over the crest of the mountain, and then, having been an hour on the summit, we prepared to descend. As a previously unascended mountain, I of course knocked from off its highest rock, and carefully bagged, this actual "top." We piled up the loose stones into a *homme des pierres*, or cairn, as a hint to any future traveller who might attain the peak that man had been there before him. Taking a last look around, we commenced a careful descent, for until we had recrossed the *arête*, and got down the rocks, our progress was necessarily slow. This was safely accomplished, and succeeded by some of those delightful glissades, to attain five minutes of which is worth hours of previous toil up steep snow-slopes. One of them was peculiar: a previous

glissade had landed us on a little ledge of snow, doubtless caused by some protruding rock. From the edge of this ledge the slope again fell off, but so sharply in its upper portion that it seemed hazardous to attempt a glissade down it. Lower down a mass of ugly rocks was waiting to receive us, if, as seemed probable, the rapidity of the descent either toppled us headlong down directly we started, or prevented our stopping ourselves in time on the less inclined part below. Kronig peered over the brink, evidently calculating these chances. Then, as if half ashamed at hesitating at anything in such a successful day, he uttered a wild jödel, dropped over the cornice, and shot to the bottom of the slope. He planted himself firmly above the rocks, so as to check me if I tumbled over, or came down too fast. The place looked ugly; but I had no notion of being beaten, especially just after removing a mountain from the unascended list. So I shot down also, and brought myself up safely a few feet above him; but it required all my effort, and my good alpenstock bent almost into the form of a sickle under the heavy strain. Kronig gave a grunt of satisfaction, and we then set to work laughing at Gabriel, who shook his head at the shoot, and crept slowly down by the rocks. He descended very slowly, and seemed too frightened to trust himself to more than an occasional sliding step. We were frequently obliged to wait for him. Sometimes, losing his balance and footing, he came down rather more quickly than he intended, in that undignified attitude peculiar to the inexperienced glissader; when he reached us, we used, under pretence of checking his mad career, to dig him in the ribs with our alpenstocks, and provoke from him thereby divers exclamations of anything but delight. I became more than ever convinced of the absurdity of his calling himself a guide.

By the time that we had reached the rocks where our baggage lay *caché*, the sun had become so powerful that I was glad enough to creep under the partial shade offered by a rock, whilst the men repacked and refreshed again. Winding up amongst rocks and snow-patches, and finally a softened slope, we gained the top of the Col Courgnier, about 9500 feet high, and descended its further side by glissades, towards a gorge in the ridge, down which we were to pass to Prerayen. But we were not yet at the bottom. Gabriel, who professed to have been this way before, insisted on keeping high up, whilst we wanted to descend at once. The result was that we fell into a maze of difficulties in getting down, which our route would have avoided. Eventually we reached the gorge, and wound down it to the cattle Alp below. To this succeeded the usual forest; we beat through a tangled mass of underwood at its edge, and emerged into the Valpelline at a point about a mile below the solitary and highest *châlet* of Prerayen.

Crossing the torrent from the Zardezan glacier above, we quickly made our way to this *châlet*, passing *en route* two or three others seemingly deserted, and the smallest of chapels. It is a not uninteresting fact, that in these valleys, however few the *châlets* around, there is generally a small chapel where service is performed, though at long intervals. The passage of this Col Courgnier, or Col du Mont Cornière, need not occupy more than five to six hours; this is of course directly, and without diverging for the ascent of the Château des Dames.

Gabriel had assured us of accommodation, though indifferent, at this *châlet*. To our great annoyance the place was locked and barred; there was not even a dog about. The herdsman was evidently up on some Alp with his cattle. Fortunately the door of the hay-loft over the cow-

house was open. I took off my wet boots, lit my pipe, and lay down in the hay, whilst the men unpacked the provisions. The meal over, I despatched Kronig and Gabriel, in different directions, to reconnoitre for the herdsman, whilst I strolled up a little hill standing out in the valley. But no signs of the Alp, cattle, or herdsman could I see. The hill was surmounted by a rude wooden cross, part of which had fallen.



HEAD OF THE VALPELLINE.

Looking down the valley, I watched the shades of evening deepen into twilight, and then into darkness. A picturesque gorge terminated the view in this direction. Behind the hill, up the valley, a jutting slope shut out the end of the Zardezan glacier. To the north-west, lay the gap leading to the Col de Collon and Evolena, whilst on the

opposite side, the actual peak of our Château des Dames was concealed by a nearer though lower summit.

Descending to the châlet, I found the guides returned without any tidings. Matters looked awkward. We had relied on finding here milk, bread, butter, and cheese, at least, to eke out our provisions, and we had therefore dipped largely into our stores. It seemed likely we should be on short commons the following day, when, in an untried expedition, we might require more food than usual. We had calculated on adding some hot milk to the coffee which we had brought with us for the evening meal, before retiring to the hay for the night; we must cut off this luxury, and tumble into our quarters at once, like primitive burghers, but not like them to save candles and fuel, but because we did not possess either of those effeminate indulgences. Whilst preparing for this cheerful ending of our day's labours, two small boys arrived from the Alp. It appeared the herdsman slept there, and only came down once or twice a week. The arrival of the boys was accidental. Visions of hot coffee, before surrendering myself to the *mauvaises bêtes* in the hay, floated over my senses. In reply to our inquiry, they said we might sleep there, and should be supplied with milk and bread, but they did not think they should be doing right in letting us have cheese or butter. The bread was black, and so hard that we had to chop it with the axe and boil it in milk before we could get our teeth through it. To introduce successfully the bread and milk into one's mouth with the huge wooden spoon or soup-ladle, was an operation requiring some ingenuity. English mouths are not so capacious as Piedmontese. Travelling accustoms one, however, to many departures from refinement, and eventually I managed pretty well; but I could not overcome the feeling engendered by the excessive dirt, and, worse

than all, smell, of the hovel, so I retired, and rolled myself up in the hay for the night, adopting the usual plaid precautions against *mauvaises bêtes* and gaps in the roof.

August 12th.—My safeguards against the enemy had not been effectual; so, after a bad night, I was glad to turn out soon after 3 A.M., and perform my ablutions in a trough, whilst the guides prepared breakfast. Not knowing what work might be in store for us, I hurried on the preparations, but it was nearly 4 A.M. before we started, the morning seeming to promise a renewal of the previous day's fine weather. The information which I had expected to obtain by local inquiry was not forthcoming, in consequence of the absence of every one from the *châlet* but the two boys. I had contemplated, also, taking a native with me, if I found one who knew anything of even the lower part of the glacier which we were going to attack; for the previous day's experience of Gabriel had convinced me he was not to be relied on. Indeed, though I could not now secure further assistance, I would have dismissed him, but Kronig positively refused to proceed without Gabriel's assistance, at any rate in carrying the knapsacks. Leaving with the boys a remuneration, which appeared quite to astound them, I started, therefore, on this at least doubtful attempt, under as few encouraging circumstances as possible; but what is that to an Alpine explorer, especially when in quest of something unknown? It only nerves him the more.

As we walked slowly up the valley, to save ourselves for hard work later on, the darkness changed to dawn, and then to sunrise, with those beautiful effects of colour which snow mountains can alone afford. Oh, the glories of an early morning walk in such scenes! the bright crisp air sending the blood of the explorer tingling through his

veins with impulsive bound, and a sensation of that perfect health which mountain and glacier scaling so largely gives; the heart beating high with anticipations of the adventures before him—difficulties to be overcome—risks to be run—perhaps dangers to be encountered; and the joyful prospects of a successful expedition, after passing through scenes of mingled awe and beauty. With nervous energy he grasps his alpenstock still tighter, and thinks, in silent gratitude, of the great Giver of all this good, ere his pent-up feelings burst their bounds, and pour forth the voice in one wild pæan of jödel and song: “*Nous serons gais là-haut.*” Ah! who would change all this for the well-earned holiday fritted away in baking continental cities and miles of picture galleries, or of gorgeously-furnished palace rooms, in the gambling saloons of foreign watering-places, on the parades of Brighton or of Scarborough, or in similarly soul-less scenes! In very deed 'tis almost an insult to name them on the same page with the wondrous scenes of nature and her God!

Half an hour took us across the pastures and rough ground beyond, forming the head of the valley. Ascending rapidly we crossed the lateral moraine, and found ourselves on the Zardezan glacier, the ascent of which Professor Forbes says, “must be in some places very steep, though I should think not wholly impracticable, though it might probably be impossible to accomplish it (the passage) without sleeping out on the glacier,” and the “apparently inaccessible face” of which, Mr. King says, “he scanned, endeavouring to trace out a possible route up it.” At this early hour the glacier was in good order, so we pushed rapidly up it for several miles. It pursued an almost straight course northwards, bounded on the west by the black precipices extending from the Pointe de Zardezan to the Dent des Bouquetins, whilst on the east

stretched up a wilderness of snow-slopes and rocks from the Dent d'Erin, seamed by three secondary glaciers flowing into the Zardezan, and the bases of which we successively passed. The third was of great breadth, and the medial moraine, formed by the junction, was strongly defined. The whole scene forcibly reminded me of the Gorner glacier, and its tributaries from the Monte Rosa chain.

As we approached the ice-cliffs separating us from the head of the glacier, we perceived they were either impassable, or so difficult that to attempt their passage would consume more time than we dare risk, with an unknown névé beyond. Our recognisance from the Château had suggested overcoming this difficulty by endeavouring to scale the rocks to the east, which, therefore, we immediately attacked. Crossing its lateral moraine we left the glacier, and wound up steep slopes of snow, interspersed with patches of rock, sometimes bare, at other times covered with rough herbage; one of these was a perfect oasis of glorious Alpine flowers in a desert of snow; amongst them I gathered some of the finest specimens of the *Gnaphalium Leontopodium* I ever saw. Water became desirable; but the sun had not yet subjected this side to his influence sufficiently to free the runnels from the icy grasp of the night's frost. Higher up I contented myself with icicles. Some of the rocks were very difficult to traverse, the snow, melted during the previous day, having frozen into sheets of ice in the night.

We made straight for a kind of couloir, half glacier and half snow-slope, running up to the ridge above. The lower part of this couloir was well covered with snow, so that we easily ascended it, only occasionally having to use the axe. Higher up, and amongst the rocks, at times every step had to be cut. Scrambling and rope-hauling suc-

ceeded, and we emerged from the ridge on to the edge of an extensive *névé*. Away stretched the snow in a kind of undulating plateau or basin, hemmed in by rocks or snow-peaks; whilst from the east descended a secondary glacier, broken up in front by *séracs*. At the further side of the basin, and almost due north, rose the white top of the *Tête Blanche*, to the south-east of which lay the proposed pass. There seemed no unusual difficulties in the way. It was clear that we had taken the right direction by ascending the *couloir*, for it was almost in an exact line with the *Tête Blanche*, whereas we should have gone unnecessarily round if we had attempted to scale the ice-cliffs.

It seemed to me, moreover, that from this *névé*, and from the ice-cliffs below, a passage in the north-west direction, and to the north-east of the *Dents des Bouquetins*, exists to the west arm of the *Ferpêcle glacier* and *Evolena*. It may be more difficult than by the *Col de Collon*, but can scarcely be any longer, and assuredly must exceed it in interest as a glacier pass. If practicable, it will form a most valuable auxiliary in passing from *Aosta* to *Evolena* in a long day.*

We now observed what, in the excitement of climbing the *couloir* and rocks, had escaped notice,—viz. that the weather appeared about to change, for a mist was already creeping over the snow-field. I insisted on immediate progress, so as to gain a look over the *Col*, if possible, before we became enveloped. At a quick pace we started across the *névé*. Gradually the mist thickened round us, and we became fog-lost. Still I would not give in. The mist seemed of that bright colour which often indicates its yielding to

* Since this was written the new sheet (No. 22) of the Federal Survey has been published; it quite confirms this suggestion. The engineers appear to have crossed the *Col*, for they give it a height of 3418 mètres or 11,214 feet, and name it the "*Col des Bouquetins*."

the influence of the sun, and it might still lift up its veil, even though only for a moment, and enable an observation to be taken, as had so providentially been the case in other expeditions. Even if it did so, the difficulty here would be greater; for, on those other occasions, its lifting up disclosed land-marks, by which the guides had directed their way, when the pall again closed over us; whilst here, on this untrodden snow-field, even in clearest sunlight, there would be no familiar points to guide us, and all would be conjecture.

At length, after floundering some time through treacherous snow, we came to a dead halt; we seemed to be getting into a maze of crevasses and ugly ground; a consultation was held; Gabriel's hitherto subdued murmurs now took open expression, and he boldly urged immediate return, vowing it was impossible to proceed. Impossible! a word the pedestrian but rarely admits to his vocabulary. Return! what Alpine explorer does that until almost all hope is past? I would not hear, therefore, of abandonment yet. Fortunately Kronig, eager almost as myself to make the pass, yet remained firm. I knew, however, the dispiriting influence which the fears or evil prognostications of one guide have on his fellows, so I promptly shut up Gabriel. Again, as on former occasions, a gap in the mist for a moment disclosed a point beyond. Taking our bearings from it, we concluded we were not far from the direction upon which we had decided as most likely to lead to the Col; so we pushed forward, despite Gabriel's rebellious murmurings. After a time we came to another halt. The mist was thicker than ever.

It was now also accompanied by a thin snow-shower, which seemed to preclude all hopes of a sufficient clearing to enable an observation to be taken. Where we were we knew not. Kronig was also sensibly less eager in going

forward. I had been convinced throughout that we were much too low, and had urged Kronig to keep higher up, and more to the right or east, in order to reach the ridge under the Tête Blanche. That this course was the correct one was seen the following day.

Meanwhile the guides were wishful to keep the line of our present track, if we went on at all; for Gabriel never ceased urging return, and Kronig, though he did not yet quite second it, now began to drop hints about its wisdom. I urged a further trial. After another deep plough we arrived at the foot of a steep couloir, running up between some rocks;—that is, it appeared to do so, for the mist prevented our seeing more than a few yards up the slope, from the edges of which we could hear the ice breaking off and falling in showers near us. In the hope of obtaining a clearer view above, whereby to judge what direction we should now pursue, Kronig disengaged himself from the rope and prepared to cut his way up the couloir. This and the falling ice extinguished the last spark of Gabriel's courage. He became absolutely terrified, and, throwing off the rope, declared his firm resolve to go no further. I was a few feet above him, and could only with difficulty restrain myself from placing my alpenstock, like a lance, in rest, and charging down upon the coward. My original estimate of his unfitness as a guide was now more than confirmed. I did not deign to remonstrate with him, or ask his assistance. Indeed, he had been of little more use than carrying the provision knapsack. I felt sure that if the pass was to be effected, Kronig and I could do it better without Gabriel, and, as for the knapsack, I could carry that also myself rather than the attempt should fail. So I did nothing more than order him to bring the knapsack to me. Abashed, he laid his burthen at my feet, whilst I wound round my shoulders, his, and Kronig's end of the

rope, and prepared to follow the latter up the couloir by the steps which he had cut in ascending, he having now disappeared in the mist. Hardly had I done so when a shout mingled with the noise of the falling ice, and Kronig's form, looming out huge and spectre-like from the mist, appeared, and he bade me wait. He carefully descended, and explained that he had been to the top of the couloir, and some distance on the plateau beyond; but the mist there was still more dense, and he had not been able to obtain any view. I could now, therefore, no longer refuse to admit to myself that we must return.

If there is a situation where disappointment is keenly felt, surely it is when an Alpine explorer is compelled by adverse weather, or other circumstances, to abandon an expedition, especially when it has the charm of untried ground to add to all its unequalled pleasures. But there was no help at hand. The snow fell thicker. It was another reason why we must return; in an hour it would obliterate our track over the *névé*, deep though our steps had laboriously ploughed. In fine weather the footmarks would be our only guide to the gap in the rocks by which we had ascended, even if we could be certain where it was, considering the devious course which we had pursued in the mist. If difficult in clear weather, much more so would it be in fog and snow storm. We calculated, however, that the track would remain distinguishable sufficiently long to enable us to reach the gap, and yet allow us a few minutes previously for the refreshment which we so much needed, it being now many hours since our early breakfast. The halt would also give such slight chance as there was for the weather clearing. In these altitudes, storms come and go rapidly and unexpectedly: knowing this, Alpine travellers never throw away the faintest speck of hope. If they did, many of their successes would be

unperformed; and they all know how a steady faith and perseverance have often led on to victory, when even hope seemed left behind. Accordingly, I clambered up to a ledge of rock and sat down to feed. The falling snow supplied the place of butter on our bread, and iced the wine most gloriously, whilst occasionally a huge flake, tired of being tossed about by the wind, would rush for shelter into Gabriel's ever open mouth: at least one's appetite remained intact, however else the expedition failed.

But we must be moving. The snow falls heavier, and we struggle across the *névé* only just in time before our tracks are quite lost; nay, during the latter part they are gone entirely, but the rocks, looming through the storm, lead us safely to the gap.

The descent thence to the *couloir* below was no easy matter, increased as it was by the new fallen and still falling snow, which concealed foot-hold, and made the rocks more slippery. Midway down, and in a most awkward part, Gabriel, who was at the end of the rope behind me, became terrified, and threw off the rope, vowing he dared not go down so fast! Hear that, ye Alpine explorers! a guide committing the absolute treason of throwing off the rope, when, without it, a slip of those in front might be fatal. For, in those awkward descents, the last man plants himself firmly, whilst the others descend a few paces, supported by him with the rope; and when they, in turn, have secured anchorage, precarious though it be, the last man drops down to their level, protected by them in like manner against a slip. I said not a word, coiled Gabriel's end of the rope round my arm, and, cautiously descending, holding up Kronig below me in turn, ere long reached the *couloir*. We descended it by the steps cut in ascending, and were soon glissading down the snow-slopes which we had so laboriously ascended in early morning.

At times, in crossing the patches of rock between the glissades, we halted to allow of Gabriel, still far behind us, getting nearer. His ridiculous aspect, when he trusted himself to a mild and cautious slide on the snow-slopes,—it could scarcely be called a glissade,—was some compensation for the annoyance and delay which he had occasioned us.

In due time we gained the glacier below, and passed rapidly down it, Gabriel leaping little crevasses in splendid style. The snow-storm of the higher region was here heavy rain, and we were fast becoming drenched. The prospect of another bad night in the hay at Prerayen, with reduced provisions, was not cheering. I began to discuss the propriety of pushing forward at once down the Valpelline to the first inn, and on my way to another district, abandoning the attempt to effect the pass, for, even if the day following should be fine, the quantity of new fallen snow would be a serious bar to success. With this view, or, in the alternative, to get the herdsman to descend with us to the chalet at Prerayen, and increase our accommodation for the night, we left the glacier before reaching its foot, and, winding up the mountain-slopes on its west side, reached the Alp, where the men were herding the cattle. Of all the Alps which I have seen, and at which I have stayed the night, this one certainly was the wildest; and not unnaturally so, situated as it is at the head of an almost unknown valley.

Generally speaking, there is a hut for shelter of some kind. Here, on this wild rocky slope, we found huddled together, in a kind of cave under a projecting rock, the herdsman and two or three assistants. Talk of Rembrandt scenes! nay, see this picturesquely gloomy hole, in drenching rain and mist. In a corner, a heap of hay and dried leaves, covered with the superfluous garments of the

men, forms the bed; in front of which hang sacks and cloths in order to keep out, if possible, the driving rain and wind. From sticks, wedged into the crannies of the rock, hang the few articles of personal comfort which they require; and, of more importance, the various implements used in their work of herding and cheese-making. The wild hair and clothing of the men, and their caudal appendages, in the shape of one-legged milking stools, strapped on behind, wagging as they walked, but equal their rough and weather-beaten, yet honest faces, and contrast strangely with the little attentions which they immediately bestow upon us—unwinding my dripping plaid, and offering bowls of milk. On this, Kronig and Gabriel, who had been assiduous in their attentions to the brandy during the day, immediately seize, while I take a sip of whisky out of my pocket-flask to keep out cold, whilst discussing matters with the herdsman. The weird picture is completed by the numerous cows standing on the slopes outside dripping with rain, and looking as if they wished to share the little shelter which the rock afforded; for there was barely room for our three additional figures. The bells on the necks of the cattle clanged dismally and fitfully in the damp heavy air, mingling occasionally with the wind's wild whistle. Oh! how different to that cheering sound which, heard afar on some bright evening, betokens your approach to civilisation and food, after a hard Alpine expedition. But I must stop, or I should fill pages from the wild weird scene, in true consonance, as it was, with the mournful feelings imbuings an Alpine explorer, when returning from an unsuccessful expedition. It appeared these men had, from their eyrie, seen us go up the glacier in the morning, and theirs were the shrill whistles which we had heard, and attributed to marmots. The return of the two boys from the chalet had explained

the unusual appearance of human beings on that glacier, and they were loud in their expressions of wonder at our undertaking such an expedition. They informed us there was no inn nearer than Valpelline, five hours down the valley, and that was an indifferent one. The herdsman offered, however, to return with us to the chalet, and endeavour to improve matters for the night; so we were soon down on the glacier again, and thence reached the chalet by the route by which we had ascended in the morning.

On the way I became so dissatisfied with the events of the day, and the not very pleasing prospects for the night, that I again reflected upon the advisability of pushing on at once for Valpelline. My appetite also hankered after the flesh-pots of Egypt; to wit, something decent to eat, instead of the blocks of black bread, chopped with the hatchet, and soaked in milk, upon which highly nutritious food the reduced state of our stores would necessitate our supping. But I did not like to give in: my time was drawing to a close; I must effect the pass; the weather might not beat us back the following day. At any rate, I would see how it then looked. I would put up with anything—even a second night—for the chance of success; if the worst happened, I would go down the valley the following morning, revenge myself against the present short commons by devotion to multitudinous *tables d'hôte*, and push on to another district, or return with fresh supplies and again attack the pass.

Whilst the fire was being lit in the odoriferous hovel, I divested myself of my wet garments, rolled myself up in the hay, lit my pipe, and tried to think I was warm and jolly, which I wasn't. In due time my valet (for your guide becomes a valet, and a good one Kronig was) announced that our luxurious repast was ready. A clean

cheese-cloth covered the small portion of the dirty table allotted to me as the "Herr," and the old herdsman had unlocked from his stores a piece of *fontine* as the smaller cheeses are called, being the inferior and second gathering from the pan after the proper cheeses are extracted from it. The small amount of meat left was sacredly reserved to reward the efforts of the following day. And thus we feasted with appetites such as only mountaineers are blessed with. And then we lit our pipes and huddled over the fire, and became as merry as ever.

The herdsman was a fine old fellow, and told me much about his hard, but free, occupation. But every one knows all about that from guide-books. No more than others whom I had encountered on this, the Italian side, did he talk of the bosh and clap-trap, "free and united Italy," in the terms of rhapsody adopted by some people who know nothing about the matter. He did not appear to think it would be any very great advantage to the untrammelled and active mountain livers and inhabitants of northern Italy, to have joined to them the lazy treacherous natives of the south. "It might be all very well, but they were nearly eaten up with the increased taxes occasioned by Sardinia's ambitious policy."

Retiring for a while, the herdsman returned to say he had made up a kind of bed for me in a cupboard in the adjoining building; but having in our investigation on the preceding evening peeped through the window and seen that dormitory, I was not so enamoured with the recollection of it as to venture on even a second inspection. However gorgeously appareled it might be, I should not take off my own garments, and therefore I might just as well go back to the hay, where, at any rate, I should have air (and plenty of it, too), instead of being stifled in a fusty cupboard. Give the mountaineer a plaid, a bundle

of hay, and a knapsack for pillow, and he is contented enough after a hard Alpine day. In the matter of his enemies, the *mauvaises bêtes*, the chances would be equal. So, not to hurt the old man's feelings for his kind attention, I told him a decided little fib; namely, that I had been so pleased with my former night in his hay, that I should be only too glad to have a second tumble into it; whereat he smiled approval. So Kronig and Gabriel crept into the cupboard, after shutting me up in the cattle-shed alone with the bats, owls, mice, fleas, and other "such small deer."

And this time I had a tolerable night, and never was happier than when Kronig awoke me soon after 4 o'clock next morning (August 13th), and, in reply to my anxious inquiry, informed me that the rain was over, and the day promised to be fine. Hurrah, for the pass yet! I thought, was up in a jiffy, shaking off the hay, and dipping my head in the run of water outside. But sodden boots had to be got on, the fire lit, coffee and milk boiled, and knapsacks re-arranged, so that it was 5.45 A.M. before we started.

Kronig was as dissatisfied as myself with Gabriel, and perhaps piqued at the failure of the preceding day, though it had been due to the weather alone, and not to any fault of his. It was obviously his interest to effect the pass. He would get high pay from me; it would add to his fame as a Zermatt guide, and to his employment by those who would doubtless follow in our footsteps. When, therefore, I positively refused to let Gabriel again accompany me, and offered to carry, throughout the day's unknown toils and trials, my additional share of the baggage (there being no one available as porter), and challenged Kronig to attempt the pass with me alone, the honest fellow's face lighted up, and he said he would go with me

unassisted wherever I went. He warned me, however, of what we were undertaking; not only should I have to carry the increased weight, but the work before us might prove very difficult. In all this I must take an additional share, as well as of the extra strain on the rope, where only two are working instead of three. I felt, however, so bound to effect the pass, that none of his warnings made me hesitate; and we had seen enough of each other in former excursions to have mutual confidence, and to feel tolerably certain that, if the pass was practicable for three, it would be for two—he at one end of the rope, and I at the other,

All this had been settled the preceding night, in firm resolve to try again this morning, if the weather was favourable. Hence the now re-arrangement and division of the baggage and other preparations. I shook hands with the jolly old herdsman (who would scarcely accept our proffered remuneration, and seemed so doubtful of the success of our enterprise, that he half hinted at expecting to see us again before night), and resumed our route of the preceding day up the valley, where Kronig soon joined me.

The morning was beautiful, and, as we descended on to the glacier, we looked back at the Château des Dames, on whose hitherto untrodden summit we had stood two days before. As the sunbeams caught her peak, she seemed smilingly to flash her eyes in encouragement of our renewed effort. How I loved her for that same, and hugged it to me, as augury good.

Now, I had resolved to push on at the fastest pace possible, so that, should the envious mist again enshroud us, we might, at least, have got so far up the Col as to get a view, and venture to proceed, even though in mist. We should be the better enabled to march rapidly, because

for the first part of the day we should have the advantage of going over familiar ground. Hence I said nothing to Kronig, but quietly pushed forward at my best, and so much so, that I noticed him at times hang back, as if slightly distressed; but a natural pride and enthusiasm restrained any outward sign in the good fellow, though he was, of course, more heavily loaded than I.

In this way, with scarce a pause, we ascended the glacier and couloir, and gained the gap in the rocks at 9.45 A.M., being little more than half the time consumed the previous day when clogged with Gabriel. And yet the steps which we had so laboriously then made were of no avail now, quite obliterated, as they were, by the heavy new-fallen snow, which always adds so much to Alpine labour. These rocks are called on some maps *Papilles Rouges*; on others the *Dents des Bouquetins*,—having, I suppose, formerly been a resort of the now all but extinct *Bouquetins*; but, as this name is more properly applicable to the range on the west side of the ice-fall, the rocks have, to avoid confusion, no name attached to them on the map illustrating this paper.

I scrambled up the last rocks to the gap in eager haste, and almost sickening fear whether we should, as on the preceding day, find the *névé* beyond enveloped in mist. But, happily, no! Away stretched those undulating snow-slopes, glistening in unclouded sun, and bounded on the north by the range leading up to the *Tête Blanche*. In this chain we distinguished the couloir, at the foot of which the storm had, the previous day, stopped our further progress. It showed clearly how far out of the right direction we had then gone in the mist and storm.*

* The *névé*, as well as the glacier, is called on some maps *Zardezan*. The general features around seemed so little to agree with those depicted, that the positions assigned, like the name of the rocks just mentioned, may

The unclouded view confirmed also the belief formed on the previous day, in the existence of a new passage to Evolena, as a rival to the Col de Collon. But I bore in mind the resolve to push on as fast as possible. After only five minutes' halt, therefore, despite our rapid ascent, we plunged into the snow, keeping east of our direction of the previous day, the track of which, deep though it had been ploughed, had been quite obliterated by the storm. On we struggled, sometimes up snow-slopes, then across one, and down into a kind of snow valley on the other side. At length the long-hoped for Col came in sight. The toil was great, owing to the increased depth of snow, and the almost insupportable heat and glare; yet scarce a moment's pause was taken. The prize was almost in our grasp, and something might occur even yet to snatch it away; so on we pushed, straining every nerve. And then high mountains began to appear beyond the Col as we rose. A few steps more, and hurrah! we were on the top, and scanning eagerly the further side, in order to see if there were any difficulties in the way of a descent.

Again not a speck of mist to hinder observation. From our feet stretched steep slopes of snow, much cut up with crevasses and ice-cliffs, but amongst which it appeared possible to thread our way to the névé of the Zmutt glacier below, and join the route from the Col d'Erin, a short

be equally questioned, and not improperly, considering so little is known of the district itself. Alpine exploration is now, every season, making great inroads into the accuracy of the maps, not only supplying palpable omissions, but knocking out, as devoid of existence, mountains, glaciers, &c., shown on even Government charts. Hence it is not an unreasonable supposition, that many parts of the maps have been concocted in the bureau of the engineers, by substituting a fertile imagination for the trouble of surveying the localities themselves. Since the exploration of this pass,—in fact during the present winter,—the before mentioned sheet of the Federal Survey has been issued. It comprises the entire terrain of the "High Level" route, and will probably contribute, more than anything else, to throw open the district to a larger number of our countrymen.

distance above the Stockhi. That plateau once attained, we knew the descent could be easily made thence to Zermatt, for we should be on old ground. In joy and gratitude, we therefore considered ourselves entitled to treat the pass as won.

Owing to the rapid pace at which we had come, it was only 10.50 A.M. We sat down in the snow, in enjoyment of the magnificent scene around us; but as the view was the same as that obtained shortly afterwards from higher ground, I shall postpone until then its description; for at our left hand, or north, rose up the beautiful snow-top of the Tête Blanche (appropriately taking its name from this top), and the *cacœthes scandendi* irresistibly impelled me towards it. We should have plenty of light left to reach Zermatt, and so complete the pass, even allowing time for unforeseen difficulties, and yet to ascend the Tête Blanche previously; and what mountaineer, finding himself near a peak which he has time to ascend, can resist doing so. There was the additional attraction of its being a new mountain,—that is, not previously ascended.

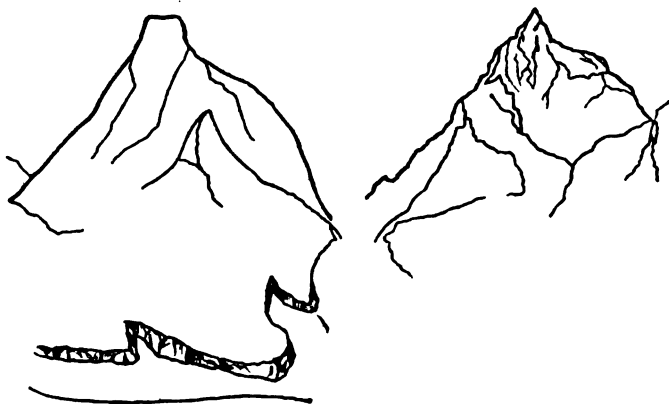
Cachéing the baggage in the snow, we again put on the rope, and at 11.10 A.M. started in pursuit, climbing almost straight up. We found no difficulties; it was simply a question of labour, the snow being deeper than ever. However, recent success had produced an excitement, which would have carried us, I believe, up half a dozen Têtes Blanches; and ere long we stood on the top, which consisted of a sharp ridge of snow, twisted up by the wind into a ledge just broad enough to walk along. This ridge seemed to descend gradually on the north-east to the Col d'Erin, whilst on the south it broke off precipitously, hanging over the new pass, and the snow-field which we had traversed below. The height of the Tête Blanche is 12,307 feet, that of the Col d'Erin 11,418 feet; and as

that Col was evidently lower than the new pass, I estimated the height of the latter at 11,600 feet, which would agree also with the apparent height of the Tête Blanche above it.* And when I regarded our track in the snow to the gap in the rocks by which we had ascended from Prerayen in the Valpelline, and, turning round, looked in the direction forwards to Zermatt, I felt that this new pass, abridging, as it did, the distance between the two valleys from two hard days' into one easy day's work, might be appropriately named the Col de la Valpelline, which name it thereupon received. It has been crossed several times since; and when more generally known, it will probably become a favourite, not only for the superb snow and glacier scenery which it offers, but as being, firstly, a not unworthy rival to the Col de Collon, in passing from Aosta to Evolena; secondly, a communication between Zermatt and the Châlet d'Otemma, as conjectured by Messrs. Buxton and Cowell; and thirdly, the most direct route between the two principal points of interest, the centres of the chains of Monte Rosa and Mont Blanc, and a link of the "High Level" route, the first in order of time, though the last in the present sequence, which the expedition of this day thus forged.

Whether it was our success, or the brilliance of the day, or the real superiority of the scene around, I cannot say; but I do not think I ever enjoyed so glorious a view. The central position of the mountain, surrounded by a vast snow-field, bordered by lofty peaks, gave it peculiar advantages. Besides the well-known view from the Col d'Erin, it displayed a prospect in two directions, which

* Since this account was written, I have become indebted to Sir T. Fowell Buxton for a boiling point observation taken on the Col in the following year, which gives it a height of 11,687 feet. Mr. Tuckett, who crossed it the same year, considers that this is perhaps 50 to 100 feet less than the real height.

that Col cannot; namely, first on the side, which the mountain itself hid, embracing the line of familiar peaks, stretching south-westwardly to Mont Blanc; and secondly, to the north-east towered up the wondrous Dent Blanche and sharp-edged Weisshorn, with the Bernese Oberland beyond. In front was the mighty obelisk of the Matterhorn, with, nearer still, the Dent d'Erin, little less in height; whilst beyond the eye ranged over the many other well-known mountains and glaciers of the Monte Rosa district. The Höchste Spitze of Monte Rosa herself,



THE MATTERHORN
FROM SUMMIT OF COL DE LA DENT BLANCHE.

THE MATTERHORN
FROM THE SUMMIT OF STOCKHL.

however, seemed hidden by the Matterhorn. Was not this a sight worth hours of toil to attain? Let those say who know, what it is to stand upon a high mountain-top in golden sunlight, and see the neighbouring peaks crowding round to welcome them. In ascending, I had noticed strongly developed, what is sometimes seen in deep, new-fallen snow; namely, the blue, shimmering light emitted from the holes in the snow formed by the alpenstock.

We scudded down the mountain, and rejoined our baggage on the Col, after an absence of little more than an

hour. The descent to the plateau below, through unknown crevasses and ice-cliffs, and only one at the rope's end to check any fall of the other, was next to be undertaken. The baggage was, therefore, carefully re-adjusted, and at 12.15 P.M. we began to descend, each step being well secured, and the rope kept constantly taut. The value of this was presently seen. Down plopped Kronig into a crevasse; but I had my heel well planted, rope tight as a drum, and alpenstock firmly fixed; so the strain never reached that jerk often so fatal, and, though much lighter, I easily checked the heavier falling body. Kronig did the same for me shortly afterwards.

The névé was treacherous, so we made a diversion on to sounder snow. Occasionally we were stopped by some yawning crevasse or towering sérac, and were obliged to go back, or take the obstruction in flank. The edges of the crevasses were fringed with enormous icicles, and displayed the well-known ethereal colour. Kronig threaded the difficulties as a gourmand selects the dishes in a Parisian *table d'hôte*. And so, in time, we reached the snow-slopes below. Some glissades succeeded, and we began descending the rocks of our friend the Stockhi.

At the first run of water we halt. It is now 1 P.M., and, as we have eaten nothing since breakfast, and have ample daylight before us, we feed luxuriously,—that is, so far as time is concerned; for the provisions, short the previous day, are of course shorter commons to-day. We stay an hour thus employed, and pleasantly too, for even a crust is relished by a glacier appetite. Gazing into the mighty rifts and spotless snows of the Dent d'Erin and towering Matterhorn opposite, we hold high festival, under the blue vault of heaven. We are soon down the remaining rocks, glissades, and slopes, and on the lower level of the Zmutt glacier once more. The sun is fiercely hot,

and we are very glad to get shelter in the forest below, the glades of which, and little nooks of hay-making, seem prettier than ever. Having time to spare, we stop at some of these lovely spots, and at the last one, before approaching Zermatt, get under a waterfall and have a refreshing attempt at an *al-fresco* toilet, sorely needed after two nights in the hay, and in order to make an entry into Zermatt in respectable guise.

And so, at 5.30 P.M., we strolled into Zermatt all right, though, despite the difficulties of a late start, and much new-fallen snow, we had, in less than twelve hours, not only effected a pass between points which had hitherto occupied two long and hard days, but had also ascended a mountain *en route*, and loitered away two hours of the time. It will be seen, therefore, that the Col de la Valpelline may be comfortably traversed in about ten hours, with an hour additional if the ascent of the Tête Blanche is included in the excursion.

And did not I revenge myself for the privations of the last few days in the matter of food? The dinner, to which I shortly afterwards sat down, would have been a treat to even an alderman. The whole resources of the establishment had been evoked in a wonderful culinary effort. Good Seiler, the landlord of the Monte Rosa hotel, presented a bottle of his choicest wine, as the *honorarium* of a new pass. Divers pipes followed, and at a late hour I retired, not to hay, but to a bed, in that serene state of mind and body which a successful day of Alpine exploration insures in a way which no other occupation can.

It only remains to add, that a fortnight after completing the "High Level" route by the discovery of the Col du Sonadon, whilst Mathews and I left Zermatt, on our way over the Théodule to Turin and the slaughter of the Monte Viso, Messrs. Hardy, Prest,

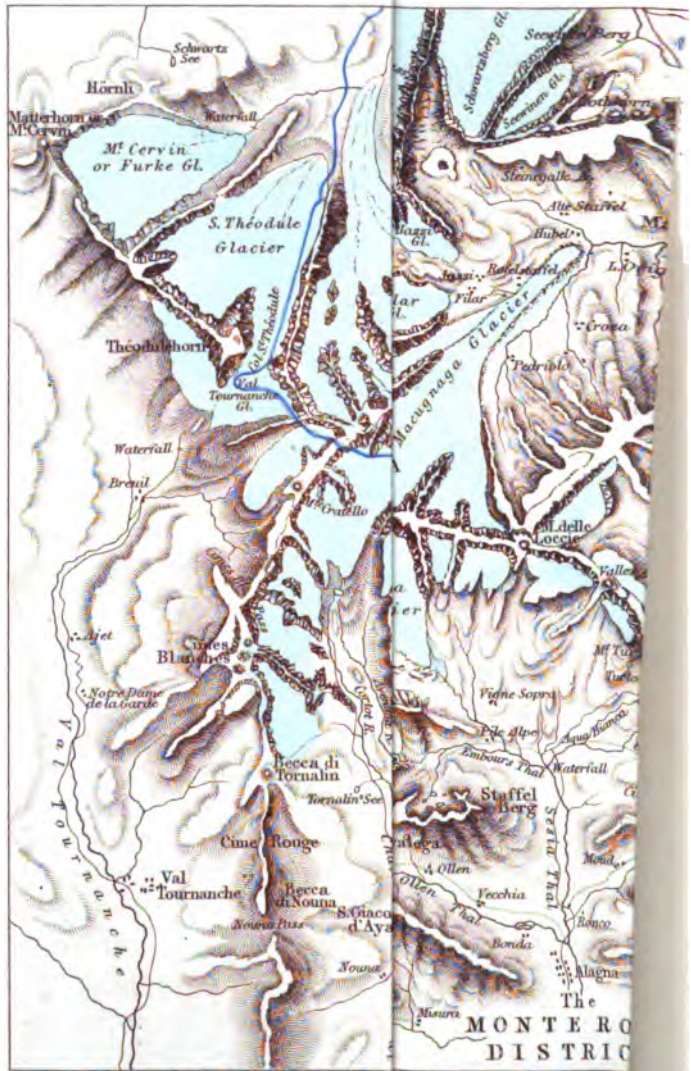
Johnson, and Hudson, who wanted to get to Chamounix, turned off, at our recommendation, in order to reach it by the new route. They arrived at St. Pierre all right by the Cols de la Valpelline, Reuse de l'Arolla, and du Sonadon, but were beaten back by an accidental circumstance from the Argentière, or last day's work. Whilst the various links of the route had been supplied by the discoverers of these Cols and that of the Chermontane, Mr. Hardy and his party were the first who had traversed them continuously thus far. Meanwhile I made a forced march from the Viso, and joined Messrs. Hardy, Prest, and Johnson at the Col de Voza, whence we crossed over the summit of Mont Blanc by the Aiguille de Gouté and Bosse du Drommedaire, descending to Chamounix, whence, with Messrs. Messer and Brandram also, we passed over the Buet to the valley of Sixt and Geneva; and I was pleased to find that Mr. Hardy's party concurred in the opinion, that the new "High Level" route from Zermatt to Chamounix, and *vice versa*, combines a series of the most interesting excursions to be found in the Alps.

CHAPTER V.

THE PEAKS, PASSES, AND GLACIERS OF THE MONTE ROSA CHAIN.



1. THE ASCENT OF THE BREITHORN.
2. THE COL DE LYS.
3. THE ASCENT OF THE LYSKAMM.
4. THE COL DES JUMEAUX.
5. THE ASCENT OF THE NORD END.



English Miles 1 2 3 4

M^r Mathew's Route ———
M^r Hardy's ———

1. THE BREITHORN.

By EDWARD SCHWEITZER.

“Auf den Bergen ist Freiheit! Der Hauch der Gräfte
Steigt nicht hinauf in die reinen Lüfte;
Die Welt ist vollkommen überall,
Wo der Mensch nicht hinkommt mit seiner Qual.”

IN my Alpine wanderings in the vicinity of Monte Rosa and through its beautiful valleys, both on the Swiss and Italian side, I have always admired the grand snow-wall of the four-crested Breithorn, but especially as seen from the road between Randa and Zermatt, and from that between Breuil and the St. Théodule col. My desire to ascend this noble mountain grew with every new visit to Zermatt; but, owing to bad weather and other circumstances, I had been prevented from fulfilling my intention until last year. The summer season of 1861, so memorable to mountaineers for constantly fine weather and clearness of atmosphere, rendered most ascents both promising and successful, and gave me the long-desired opportunity of ascending the Breithorn. As the 1st of September dawned upon Zermatt with unusual brightness, and accompanied by a slight northerly breeze, I at once made the necessary preparations for an ascent on the following morning.

A gentleman from Dublin, Mr. D. Howe, who intended to cross the St. Théodule, offered himself as my companion, and we therefore engaged two guides,—Pierre Taugwalder and son, the former one of the most trust-

worthy and experienced icemen of Zermatt, and the latter possessing all the sterling qualities of his father.

At two o'clock in the morning of the 2nd of September I heard the measured footsteps of the guide approaching my chamber; and immediately afterwards a knock, accompanied by the welcome information that the heavens were perfectly cloudless, with every promise of a glorious day, made me forsake my couch with alacrity. It was 3.15 A.M. ere we were able to file off; we plunged into the exhilarating morning air, faintly lit up by the stars, which shone with that wonderful brightness which resembles electric scintillation, whilst from the waning crescent-like moon in the south-east there streamed a gentle lustre upon the summits of those dark frowning mountains which, like cyclopean walls, hem in the picturesque village of Zermatt. In these twilight hours, the indefinite outlines of all forms, and the profound stillness which generally reigns, impress the mind with a sensation of mysterious vagueness, and tinge the venture of the coming day with mingled feelings of hope and doubt. In our case, however, the silence was broken by the rush of the wild Visp, and by that of the wilder Zmutt torrent as we crossed its bridge. We now commenced a steep ascent through a small wood, and came to a narrow path overhanging the Gorner glacier, which, in the light of early dawn, stood out spectre-like, with its bluish white pinnacles, turrets, and broken arches.

Soon after four o'clock the moon and stars began to pale, and a kind of faint light, the reflection of the rays of the sun, which was still beneath the horizon, played around the uppermost crest of the Matterhorn. The west was illuminated with a faint yellow glow, whilst the east assumed a dark purple; but the hue of the former faded rapidly into a leaden colour as the first fire-blush tinged

the Höchste Spitze of Monte Rosa, and in succession, according to their respective altitudes, the summits of the Weisshorn, Mischabel, and Matterhorn.

“Einsame Häupter
Glänzen erhellt,
Und Aurora berührt sie
Mit den ewigen Strahlen,
Als die ragenden Gipfel der Welt.”

I hardly remember having ever witnessed such an illumination: each successive peak seemed lit up by an ethereal crimson fire to usher in the glories of the coming day.

The Matterhorn, now our nearest neighbour, stood majestically before us in grand and noble proportions. Its towering peak, cleaving the blue air, displayed marvellously all the gradations of light, from the first flicker of the reflected ray to the pale blush which deepened into crimson, and ripened gradually into the golden beams, which, with growing intensity, glided down the massive pyramid, until they smote our brow as perfect day.

We had now reached the terminal moraine of the Gorner glacier, and scrambled and tumbled over the broken fragments; but, notwithstanding the desolate waste around us, the elastic sunlit air inspired us with the highest spirits. At six o'clock we stepped upon the St. Théodule glacier. The stern silence which reigns in these regions at night, and seems to bind them with the chain of death, was now broken as the day began to advance, awakening even the sluggish life of the glacier. This first spoke in the faint accents of tiny rills, then with the shriller notes of streamlets and the fuller voice of torrents, until, as the hours crept on, charged with the life-giving forces of light and heat, the ice-masses rent asunder

with the roar of thunder, and deep-toned avalanches shook the air.

The appearance of the glacier struck me as unusual; for when I crossed its col in the summer of 1858, it presented one sheet of white snow, into which I sank above my ankles, and not unfrequently up to my knees, making progress most laborious. We had now before us a slope of granulated ice of a leaden hue, hard, crisp, and dry, from the last night's frost, over which the foot passed swiftly. As we approached the culminating point of the glacier, the ice gradually assumed the appearance of snow, which glittered with thousands of dancing light-sparks, as the morning beams smote the crystallised surface.

For about two-thirds of the glacier route to the col the views are very imposing, and it is worth while to linger for a moment to contemplate the cyclopean belt of mountains. Facing the north, our right is flanked by the Petit Mont Cervin, the Breithorn, Castor and Pollux, the Lyskamm, and the many-peaked Monte Rosa; on our left uprears, in stupendous grandeur, the wonderful form of the Matterhorn; then comes the Dent Blanche, the Gabelhörner, the Trifhorn, the sharp-pointed, magnificent Weisshorn; after which, circling round to the right, follows a bold range in the Rhone valley, which links itself to the gigantic masses of the Saasgrat, and finally brings us back to the Monte Rosa. It seemed, indeed, like a chain of frosted silver; and, to perfect the resemblance, in the far north rose the Bernese Alps, over which the Jungfrau blazed like a precious clasp, whilst pendent snow-fields and overhanging glaciers, like giant drops, jewelled the massive flanks of the white-shining summits. I have given but a superficial outline of this unrivalled scene; but it may, I hope, suffice to encourage moderate climbers,

even of the fair sex, to penetrate into this region; and I can assure them, from my own experience, that nowhere in the Alps, not excepting Chamounix or the *Æggisch-horn*, can they survey with greater ease, whilst standing in the midst of a perfect arctic region, such a grouping of colossal mountains, ranging generally from 13,000 to 15,000 feet in height.

At 7.10 A.M. we reached the St. Théodule col. We rested for a while on a bench outside the hut at the summit of the col. The air was calm, and the sun, even at that early hour, struck warm, and rendered this refuge in the snow-wilderness a pleasant shelter, while the arrival of guides returning from Zermatt, and the presence of a lady and gentleman, with their attendants, gave animation to the scene. The thermometer indicated a temperature of 48° Fahr. Galton's hypsometer gave the boiling-point at 192.8° Fahr.; and this, compared with the barometer of the Observatory of Geneva, establishes the altitude, according to Guyot's tables, at 11,014 feet: the Swiss trigonometrical measurement gave 10,900 feet. After this examination, I took a hasty survey of the southern side of the col. A glorious sight presented itself as I gazed upon the great masses of the Piedmontese mountains stretched before me in majestic outlines.

Our guides now admonished us to proceed. Veils and spectacles were adjusted, both of which I discarded unwisely, as impediments to sight, hoping to be exempted, as on former occasions, from the injurious effects of the vibration of snow-light. I did not suffer at the time; but my eyes were much inflamed the next morning,—sensitive even to the diffused light of the room,—and I was compelled for two days to use smoke-coloured spectacles.

At 7.45 A.M. we left the hut, and, bearing away in an easterly direction, traversed the snow-fields behind the

Petit Mont Cervin. Having gained the highest plateau we entered on long snow reaches, which extended to the ranges of the Breithorn, Castor and Pollux, and the Lyskamm. Precisely at 9.30 A.M. we arrived at the base of the Breithorn. The colossal wall, which connects itself with *Les Jumeaux*, consists of four elevations or crests, of which the most westerly, overhanging the Petit Mont Cervin, is the highest, and, according to a trigonometrical measurement by the Swiss government, calculated at 13,903 Swiss, or 13,685 English feet. Towards this summit we directed our steps. Before we commenced our more trying task we halted for about ten minutes, during which time we partook of a small repast of bread and butter, cold meat, and a cup of Beaujolais.

I must say here a few words on the injudicious habit of supplying guides and travellers with a heavy supply of food and wine. I so entirely subscribe to Professor Tyndall's opinion, expressed in his admirable and classic work "On the Glaciers of the Alps," that I cannot refrain from repeating it here. He says, "Both guides and travellers often impair their vigour and render themselves cowardly and apathetic by the incessant refreshing which they deem necessary to indulge in on such occasions." I observed how little food or wine Taugwalder took, and that he preferred the country wine to any stronger drink. This is the habit of all the best guides. With a roll and a piece of chocolate I have sustained myself on many a long climb, husbanding my strength by an even measured pace, and avoiding frequent draughts of water. A piece of sugar will often assuage the painful effects of burning thirst; a raisin or plum will do the same. When water is near, the addition of an effervescent powder is most refreshing but of all beverages, that which soothes me most, when much fatigued, is a slightly sweetened

infusion of black tea, mixed with red wine in equal proportions. It is food and drink at the same time, and allays the irritation of the mucous membrane. Butter ought not to be omitted on a mountain excursion; with bread it is often preferable to stringy hard-fibred meat, such as is generally obtained. Brandy ought only to be used as a remedy in case of sudden indisposition. Nothing impairs the nervous powers so much as frequent potations of cognac and water; they give at first an increased feeling of activity, but, "false as the dream of the sleeper," they assuredly leave the climber more enervated and less fit for work. A case of the kind occurred this season, and might have led to serious consequences. A young Englishman of about twenty-four years of age, the very picture of strength and health, made the passage of the Weisssthor from Macugnaga. He was not much accustomed to severe mountain-climbing, and when suddenly confronted by dangerous slopes, he apprehended that his physical powers would not carry him through his appointed task; so he applied himself to frequent draughts of cognac and water, against the warnings of his guides. The result became soon apparent. They had to drag him up by ropes in an exhausted state, endangering in no slight degree the safety of his trusty conductors. In fact, as he told me himself, he had not a notion how he overcame the difficulties and gained the summit: he felt all the time in a helpless stupor.

We now entered with a right good will upon the more serious climb, up slopes having an angle from 45° to 55° . It was therefore expedient to be roped together. I took my place next to the chief guide, my companion followed, and the second guide brought up the rear. The rope between each extended to about five feet, which may seem a small allowance; but it had its advantage on a steep incline, as it

gave steadiness to our phalanx, and in case of a slip it would have immediately communicated a warning that would have been replied to by a counterbalancing check, so that the danger of a serious fall was reduced to a minimum. During our progress we kept first in a north-west direction ; but as the ascent increased in steepness and the snow in hardness, we were compelled to commence a zigzag course. We now approached two parallel transverse crevasses, and as they were wide, and the opposite landing was high, we dared not venture on a spring. We therefore searched for a snow-bridge, which we soon found, but in that frail condition that the probing alpenstock sank through it into the chasm beneath, producing a long narrow circular tunnel of the most exquisite cerulean hue. Our guides, from practice, knew how to overcome this difficulty, and in their operation I perceived they unconsciously acted upon a scientific principle. Taugwalder stepped forward and coaxed the snow, first by patting it with his staff, then by flogging it, and finally by trampling upon it, though carefully, and thus changed the crumbling snow, by increasing pressure and the subsequent process of regelation, into a compact firm mass, thus practically illustrating that property of ice, first noticed by Professor Faraday, which Professor Tyndall has so happily applied to the explanation of various glacial phenomena.

Whilst the guide was engaged in consolidating the bridge over the upper crevasse, which was the larger of the two, I examined its ice-architecture, and was struck with the plain horizontal bedding visible in some places, traversed at right angles by vertical blue veins. The surface was somewhat convex ; and at one particular spot we admired the grouping of splendid ice-pendants, some resembling organ-pipes of all sizes, others appearing like columns, the stalactites of frozen water emitting a

chequered light of emerald green and hyaline blue. What a gorgeous display of the gems of an ice-world!

After safely crossing the crevasses, the ascent became so steep, and the snow so hard, being converted by the unusual heat of the season almost into ice, that our footing was rendered precarious, and Taugwalder sent his son forward to assist him in cutting steps. We now clung on to a very steep slope, and our onward course was of necessity slow. Once or twice, when looking down, I was impressed with the conviction that the smallest slide, unsupported, would be an inevitable disaster, leading to the unpleasant chance either of being engulfed in one of the crevasses, or of being impelled beyond and hurled down some hundreds of feet. It was unwise to entertain even the possibility of such an event; and indeed, owing to the great caution required for every onward step, and the consequent tension of the nerves, every other reflection was effectually banished. Thus we hewed our course upward, small ice-pieces flying like spray over our heads, the larger ones bounding at once beyond our sight.

Taugwalder's deep and monotonous voice, issuing as from a cavern, directed the operations of his son, and admonished us to follow cautiously in his steps. Once a slip occurred: my companion behind me stumbled, we all threw ourselves forward, and he recovered himself in an instant, but in so doing wounded my right hand with his alpenstock. Had the rope been long and slack, the slider would have obtained, in all probability, an impetus which, on such an incline, and with such insecure footing, might have compromised the safety of all. After an hour of this kind of work the acclivity became less, and being more at my ease I looked towards the summit, which was yet some distance off. My attention was attracted to the

singular aspect of the sky, now of the deepest blue, almost approaching black, and I fancied every moment I might see the faint twinkle of a star. The rays of the sun streamed through the deep azure ether, nearly bereft of their intensity, so that I gazed into that fountain of light without flinching; not so when I directed the eye upon the snow, the reflected, highly intensified light from which painfully dazzled my sight. It was evident we had now penetrated into a different region, where even the glories of the sun dimmed into dull, lustreless light, resulting from the small amount of moisture in the atmosphere at this height, and the consequent diminished diffusion of the rays.

Suddenly the rope slackened; we had turned the uppermost shoulder of the mountain, and, facing eastward, with a shout of transport, we scaled the highest crest, and stood upon the summit of the Breithorn exactly at 11 o'clock. If snow had rested upon the upper regions we should have scarcely required the ice-axe, and have sooner reached our goal; but the gain would have been most likely counterbalanced by slower progress over the accumulated snows in the lower valleys. Neither fatigue nor shortness of breathing detracted from the enjoyment of contemplating a world of mountains — a true mountain map — that extended far and wide in all directions beneath our pinnacle, and burst upon us with no slight surprise. Who could behold such a panorama without emotion? At first the eye was startled and bewildered, and, at a superficial glance, might right well have compared this vast mountain-picture with an angry sea, surging to and fro, in rocky white-crested billows, with the floating icebergs of northern waters.

To the north the Oberland mountains were to be clearly distinguished, whilst to the east the eye swept as far as the Graubünden and Tyrolese chains, and embraced

in the south the Lombardian plain, the blue-hazed Apennines, and caught the faint, air-reflected silvershine of the Mediterranean, followed from south to west by the Maritime, the Cottian, Graian, and Pennine Alps, with a dim glimpse of the Pyrenees. The most conspicuous object in the west was the towering mass of Mont Blanc, discernible with all his aiguilles and glaciers. Even here, most likely owing to the singular transparency of the atmosphere, his stupendous magnitude, disputed by none of his compeers, impressed me with the truth, that he is the Monarch of European mountains. Rising from vast glaciers, piercing the storm-cloud, gilded the foremost by the earliest morning ray, and flushed the latest by the parting day, wrapt in his silver robe he reposes, calm and cold, in all the majesty of his adamant strength! The summit on which we stood formed a kind of crest on which two or three abreast could safely approach the eastern extremity, whence a steep descent leads to the second crest; beyond it appeared Castor and Pollux, the latter below us, the former somewhat higher. I must confess to being disappointed in the appearance of Monte Rosa; its colossal mass is rivalled by the gigantic mountain-wall of the Lyskamm, which it overbrows by little more than 300 feet. The northern flank of the Breithorn has a severe snow-slope, abutting upon an inaccessible vertical wall; its southern side is the one we ascended, whilst the western precipices overhang the Petit Mont Cervin, nearly one thousand feet below us. The great Matterhorn, whose eastern buttress we fronted, presented itself in singular and incomparable form, an object of general attraction, enhanced by the defiance it has flung to the boldest mountaineer to dare its inaccessible crown. Viewed from Zermatt, and still more from the Rymfischschwung, it gave me the impression of a reposing sphinx; but I

never could realise Ruskin's comparison of a "rearing horse."

So singularly beautiful was the day, that the panorama well might be described in the poet's words, "ringed and roofed in azure;" yet whilst the Swiss mountains in their northern air stood out in bold relief, as if carved by the chisel of the sculptor, the soft south had thrown an undefinable charm over its Alpine world, melting the sharp outlines into purple haze, and thus rendering the contrast between the two regions most marked.

The guides had spread on the snow our frugal meal; and having satisfied nature's demands, I arranged my apparatus for ascertaining our altitude, an operation in which Taugwalder gave useful assistance. The air was perfectly still; the thermometer indicated 37.4° F.; and by comparing the barometer of the Observatory of Geneva with the results of Galton's hypsometer (which gave the boiling-point at 188° F.), I obtained an altitude of 13,792 English feet. We had hitherto enjoyed a cloudless sky, marred neither by haze nor floating vapour; but during the last quarter of an hour we observed light clouds scattered here and there upon the Piedmontese peaks. Some of these air-sailers rested like ascending vapours upon the highest summits, giving them the appearance of active volcanoes, whilst others floated like balloons from crest to crest. In directing my attention to a light vaporous cloud, I observed it gradually dissolve in the air, then again appear in an altered form,—the result of solution and condensation, as hot and cold air-currents struck the mountain. I never experienced so sudden a change in the atmosphere within one hour; and ere we descended most of the southern ranges were covered with heavy cumuli. We regretted we could not prolong our stay beyond an hour; but that hour afforded infinite gratification, and stored memory's gallery with pictures ineffaceable.

The guides, after having picked up the few traps, placed us in the former marching order; and with the same allowance of cord between us, and under a warm meridian sun, we began to descend at 12 o'clock. By an oversight we had turned too much in an easterly direction and lost our old foot-track, so we had to cut new steps. Going down a steep and hard snow-slope, with ominous-looking crevasses in front, is somewhat nervous work. Every step demands the greatest caution, as neither toes nor heels afford the usual support; but the sides of the feet, edged into newly-cut ridges two or three inches deep, are the pivots on which the balance of the body depends. In such moments the assistance of a good alpenstock is keenly felt, and no one ought to venture on such slopes who has not a steady eye and head. Gradually and safely we approached again the great crevasse, but now at a point where the snow was more unsafe than before. A spring was by no means advisable on a steep and hard snow descent, and young Taugwalder prepared to slide over it on his back, well supported by the rope, but his father counselled otherwise. The strongest staffs, with the ice-axes, were corded together and placed upon the frail snow-bridge; and by means of this temporary construction we safely gained the opposite side.

We soon reached the snow, which we now found impassible to the feet; and as no crevasses intervened between us and the base of the declivity, we prepared for the exhilarating velocity of a glissade. A fair length of cord was allowed, a whoop was given as a signal for the start, and away we went in gallant style, sliding into the snow-basin beneath in an incredibly short time. All now was plain sailing: released from our bondage we walked with long and vigorous strides down the snow-terraces to the St. Théodule col. Here we rested for half an hour. How different from the morning scene! Guides and

travellers had disappeared, stillness and desolation had resumed their sway. And yet even here the words rose to my lips —

“This is not solitude: 'tis but to hold
Converse with nature's charms, and view her stores unroll'd.”

The noble grouping of towering snow-mountains, the vast ponderous snow-fields, the wonderful glaciers, the chequered atmospheric illuminations, are so many stores of nature, which excite a thoughtful mind to contemplation, and lend a peculiar charm even to these wastes.

We could now command the entire attention of the man of the hut, so we ordered an infusion of coffee; and never tasted the fragrant Arabian bean more refreshing, though whether it might have obtained the same verdict under other circumstances is somewhat questionable. Having offered our obolus to the serving-man, whose aspect betokened an intimate acquaintance with dulness, my companion, Mr. D. Howe, shouldered his knapsack, and with a hearty wring of the hand we parted, he down to the south, to the valley of Tournanche, and I northward to Zermatt. As I lingered for a moment at the highest point of the col, contemplating, probably for the last time, the wonderfully stern grandeur around me, I perceived on the long sweep of the St. Théodule glacier an actually beaten track,— a high road. No fresh snow had fallen for some time, and this, combined with the fine weather, had allured many travellers into this region. From our elevated position on the Breithorn we saw them passing and repassing in long files.

Agreeable as our morning ascent had been, we found the return by no means so pleasant at this hour of the day. The heat of the sun rendered the surface slippery, which was now channeled by a thousand rills and streamlets:

nor were the heavens very promising; a heavy cloud projected from the crest of the Matterhorn, and long cloud-bands swathed the mountain-walls.

As we left the glacier we were greeted on its very verge by welcome tokens of life: the *Ranunculus nivalis* shed its silver ray upon this dreary waste, and further on the *Gentiana glacialis* and *nivalis* gemmed sundry little nooks with the light of their blue petals. The flowers of the Gentian tribe and those of many other Alpine plants were unusually rare at this period, having passed into seed, owing to the long-continued heat and drought.

We now sped over some old moraines, reached the rock-ledge near the Gorner glacier, and passed the wood of the Zmutt valley. The wind, which had risen in fitful gusts, now grew in strength and bent the hoary Arven, whose long barbed branches floated like streamers in the agitated air. Onwards we strode. The sight of the beautiful meadows, as they slope valleyward over terraces and knolls, gladdened our hearts; and as we stepped upon their emerald carpets, the eye, so long tried by the intense snow-light, felt a grateful relief. And now we neared Zermatt. For some time it had greeted us with its hospitable roofs. Long lines of cattle drew homeward from the Zmutt valley, and their melodious chimes mingled pleasingly with the distant sound of the belfry tower. Scattered groups of peasants, and even the curé in his long flowing robe, were busily engaged securing the fragrant hay against the approaching storm.

At 4.30 P.M., after an absence of 13h. 15m., we entered the comfortable hotel of Monte Rosa, heartily welcomed by its excellent host. I heard the wind roaring along the great rock-walls, and not long after the thunder reverberated in the deep mountain recesses. But it was

a charmed season. The clouds broke and dispersed, and at eventide the stars shone with gentle, peaceful lustre, heralding a bright to-morrow.

The foregoing description of the ascent of the Breithorn is not intended to convey the idea that I am the first by whom it has been accomplished. Several members of the Alpine Club had preceded me at an earlier period of this season. The Rev. J. F. Hardy acted as guide to a party of friends, and, although the mountain was entirely unknown to him, succeeded in conducting them successfully to the summit.

My object has been to link this description to that of other ascents in the neighbourhood of Monte Rosa, and thus to perfect the delineation of that range. I ascended the Breithorn under perhaps more severe conditions than usual, as the great heat of the season had condensed the snows of the upper regions into almost solid ice.



THE LYSKAMM, FROM GRESSONEY, ST. JEAN.

2. THE COL DE LYS.

BY WILLIAM MATHEWS, JUN., M.A.

THE season of 1859 will not easily be forgotten by any traveller who had the good fortune to visit the high Alps in the autumn of that year. The long-continued summer drought had made me apprehensive of a wet August, but the mountain weather of that month, although surpassed by its unexampled loveliness in 1861, was on the whole extremely brilliant, and finer than I had ever before experienced among the Alps. The heat had thoroughly solidified the elevated snow-fields, and rendered them easy to traverse; while it had made the steeper slopes hard and glassy, and the crevasses more than usually wide and difficult. The same cause had advanced by at least a

fortnight the flowering of the Alpine vegetation, and when I reached the mountains its too fleeting beauty was already on the wane.

On the 1st of August, 1859, my brother, Mr. G. S. Mathews, and I left London in the company of the Rev. Leslie Stephen, with whom we had arranged to have a few days' mountaineering in the Bernese Oberland, before he joined his travelling companion, Mr. Hinchliff. At Interlaken we picked up our guides, Jean Baptiste Croz and Michel Charlet of Chamounix, the former an old and trusty friend, the latter a man of comparatively second-rate qualifications, whom I had somewhat unwillingly accepted at the instance of Auguste Simond. Auguste did not feel strong enough to accompany me himself, and recommended Charlet in his stead, characterising him as a man "*qui n'aimait pas faire des dépenses inutiles*,"—a phrase which Croz translated into, "*il se pendrait pour six sous*." However, I am bound to say for Charlet, that he never flinched from his work, and that he went through a great deal of exertion without a murmur, although he did not hesitate to express a preference for the society of ladies at a lower elevation.

After spending a delightful week in the Bernese Oberland, during which my brother was introduced to the high Alps in the exciting expedition described by Mr. Stephen in another part of this volume, we arrived on the 10th at Kandersteg, where we took leave of that zealous and accomplished mountaineer. We then proceeded by forced marches to Zinal, whence we made, by the head of the Turtmann glacier, the first attempt to reach the summit of the Weisshorn,—an enterprise which, though it did not succeed, was not without its value, since it was the means of demonstrating the impossibility of traversing the northern arête. Foiled in this, the principal object of our journey,

and acting upon a suggestion made by Mr. Ball in a note to Mr. Hinchliff's paper on the Trift in the 1st Series of "Peaks, Passes, and Glaciers," we determined upon trying to effect a passage to Zermatt by the depression in the ridge between the Dent Blanche and the Gabelhorn. This spot was the only piece of snow-scenery visible from the inn at Zinal, and it had a highly alluring appearance.

The undertaking was signally successful. We quitted Zinal at 4.20 on the morning of the 17th, gained the col at 11.45, and, descending the Hochwang glacier, arrived at 12.45 at some rocks on its left bank, which turned out to be the summit of the Ebihorn. The descent to the Zmutt glacier appearing easy, the day's work was virtually accomplished; and we halted an hour for dinner. Of all the points of view in the vicinity of Zermatt, unrivalled as it is in the number and beauty of its panoramas, for near mountain scenery I unhesitatingly give the palm to this position. On our right was the Col d'Erin, from which the great Zmutt glacier flowed down beneath our feet towards the valley of Zermatt; eastwards we looked up the ice-streams of Findelen and Gorner to the pass of the Weiss Thor, while opposite to us, bathed in the full light of the midday sun, was every peak of the Pennine chain from the Dent d'Erin to the Strahlhorn. Rapt in the beauties of this glorious scene, my eye wandered from mountain to glacier, until it rested upon the untrodden ice-field filling the vast hollow between Monte Rosa and the Lyskamm, and I began to speculate whether it were possible to effect a passage among the wilderness of seracs which appeared to constitute its lower portions. At the summit of the glacier was a snow-saddle, connecting the two mountains, and it suddenly occurred to me that this must be the very spot reached by Zumstein many years ago in his ascents from

the southern side of the peak which bears his name. I had not then read the account of his interesting expeditions, but it was clear that we could descend by the route he had taken. As we were about to enter Zermatt by one new pass, we thought we could not do better than quit it by another; so we at once resolved to attempt to force the passage of the Monte Rosa glacier, and cross the col to Gressoney.

We reached Zermatt without difficulty early in the evening; and after an agreeable sojourn of three days at the excellent hotel of M. Seiler, we proceeded to put our project into execution. We judged our two guides amply sufficient for the expedition, provided they were not overburdened, and we accordingly sent our knapsacks by special messenger over the St. Théodule to Chatillon, intending to pick them up there on our way to Mont Blanc.

On the morning of the 21st we strolled quietly up to the Riffel, and passed a delightful afternoon on the Gornergrat and Riffelhorn, making a careful survey of the ground to be crossed on the morrow. The ascent of the Riffelhorn is amply repaid by the splendid view it affords of the Gorner glacier, from its origin in the snows of Monte Rosa to within a short distance of its extremity. This magnificent ice-field lay stretched like a map beneath our feet, and each of its constituent elements, resulting from the distinct tributary glaciers, could be traced with the utmost precision. While studying the surface, I was surprised to observe a number of hollows, looking like huge cauldrons sunk into the ice. I counted no less than eight-and-twenty of these singular depressions, arranged along two lines parallel to the length of the glacier, and at about equal distances apart. They were all dry but one, which was filled with water of the most brilliant blue. I examined one on the following day: it had a rudely ellip-

tical outline, and resembled the inside of a boat more than anything else I can compare it to. It was about thirty feet long, fifteen feet wide, and twelve feet deep, and had no orifice at the bottom. I have since discovered that these hollows have been described by Agassiz and Schlagentweit, and that they are represented (but very poorly) in the plates of the Gorner glacier in the atlases attached to their respective works. The former writer calls them "*entonnoirs*" (funnels), and the latter by the equivalent German, "*trichter*." Agassiz, in a vague and unsatisfactory paragraph*, refers their origin to the union of surface rivulets charged with gravel, but Professor Tyndall, although not distinctly mentioning them, has, I think, given the real clue to their formation.† He adopts the theory of Agassiz, that moulins are produced by a fissure of the glacier crossing a surface stream, which then plunges into the crack and scoops out a shaft, and that this shaft is carried downwards by the motion of the glacier, until the ice is cracked again in the same place as before, and the moulin is reproduced above. In support of this view, Mr. Tyndall states that he has frequently seen several extinct moulins at equal distances apart in advance of the active one. Now let us suppose the nature of a glacier channel to be such, that the crevasse in which a moulin has originated begins to close before the new crack is formed above; the water, checked in its descent, would naturally eddy at the mouth of the shaft, and produce such a hollow as those we see upon the Gorner. However it may be, these "*entonnoirs*" merit careful study; and I would especially direct the attention of travellers to the nature of their surfaces, whether even or exhibiting open or healed crevasses, to the direction of the long axes of their elliptic

* "*Etudes sur les Glaciers*," p. 54.

† "*The Glaciers of the Alps*," pp. 362, 366.

margins, and to their position with respect to active moulins, upon all which points more information is needed.

The Gorner glacier has another peculiarity which is deserving of mention. On looking along the largest medial moraine, it did not appear to be connected with any mountain ridge, but to issue directly from the middle of the snow, about half-way between the Gornergrat and the rock called Ob dem See. I presume that this moraine really originates in one of the northern spurs of Monte Rosa, and that its upper portion is smothered by the masses of snow which descend from the ridge between the Nord End and the Cima.

On returning to the Riffel we made the necessary dispositions for the morrow, ordered our guides to call us at 1.30 A.M., and retired to rest in full confidence of the continuance of fine weather and of consequent success. On the morning of the 23rd, Croz knocked at our door two hours later than the appointed time, and on coming downstairs we found a clouded sky and a strong south wind, sure harbingers of bad weather in the Alps. The deplorable accident, by which an unfortunate Russian gentleman had lost his life in a crevasse on the Findelen glacier a few days before, appeared to have completely unnerved Seiler, and he implored us to defer our excursion in such importunate language that I scarcely knew what to do. As I never like to start against the judgment of the guides, I referred the matter to Croz, who after some little hesitation decided on postponement. We sat down to breakfast in the deepest chagrin, expecting to be kept at the Riffel several days, and to have, after all, to follow our knapsacks over the St. Théodule to Chatillon. Such is the fickleness of Alpine weather, that by the time our meal was finished the wind had changed and was blowing directly from the north; in a few minutes every particle of cloud

had disappeared, and the morning brightened into as fair a day as ever lighted up the Alps.

It was now too late for Gressoney, but it did not require many minutes' consideration to fix upon a suitable excursion. The guides were instantly summoned, provisions hastily stowed into knapsacks, Seiler complimented in the most amiable manner upon his prophetic foresight, and at 5.30 A.M. we were *en route* for the Cima. It would be out of place here to dilate upon the panorama afforded by this celebrated peak; I shall merely say, that it would be impossible to imagine more favourable atmospheric conditions than those under which we beheld it, and that the Italian view was perfectly clear, and of inconceivable loveliness. While walking along the base of the Gornergrat on our return, we came upon a little rocky knoll, covered with cushions of the star gentian, each studded with countless flowers, expanded in the noon-day sun. I gathered one of the flowers and held it up against the sky. The colour of the sky was very nearly the same tint as the gentian blue, and of a depth and tenderness which defies description.

We regained the Riffel exactly at 2 P.M., and felt almost grateful to Seiler for our charming excursion. We found the hotel crowded by a party, or rather cluster of parties, enticed by the extraordinary brilliance of the weather to make the ascent of Monte Rosa.

We spent the evening in strolling on the slopes of the Riffel, and watching the exquisite beauty of the sunset. Long after the Alpine glow had faded from the chain of Monte Rosa, the Bietsch-horn, rising up beyond the Rhone, opposite the opening of the valley of St. Nicholas, was tinted delicate violet; there was not a speck of cloud in the sky nor a breath of wind stirring; and all nature seemed reposing in deepest peace and tranquillity.

At 2 o'clock on the morning of the 23rd we were up and dressed, and on descending to the *salle* found the Monte Rosa company already assembled at breakfast. As it is necessary to walk in single file along the path which leads to the Gorner glacier, and a large party always causes delay, it was important to start first, and at 2.50 our small band of four was under weigh, followed by a line of five-and-twenty people. We at once struck into quick march, notwithstanding the cries of some guides behind, who, supposing our destination was the same as theirs, shouted to us to go more slowly. The path along the Riffelberg is troublesome enough to follow in the daytime, interrupted as it is by landslips in not a few places. After a good deal of stumbling we reached the ice at 3.55, and turned our faces towards the centre of the opening between the lowest spurs of Monte Rosa and the Lyskamm. Nothing could exceed the fascination of the scene. The sky was clear and beautifully starlight, the moon two-thirds upon the wane, and the brilliant planet Jupiter shining on either side of the Cima, above the old and the new Weiss Thor; while behind the peaks of Monte Rosa Orion's giant form was slowly climbing upwards. From the Cima in the east, to the Matterhorn in the west, lay a field of ice and snow twelve miles in length, bounded on the south by the barrier of well-remembered summits, glimmering with shadowy and almost dream-like vagueness in the faint light of the moon.

As I anticipated an unclouded sunrise, I noted carefully the successive changes in the appearance of the sky and mountains. At 4 o'clock the light of dawn began to creep over the old Weiss Thor, and to cast shadows upon the ice, and in a few minutes more those cast by the moon could no longer be distinguished. The western stars, which had formed a glittering coronet to the Matterhorn, now dis-

appeared; but it was not until twenty minutes later that those in the east, which I should have imagined would have been first extinguished, had ceased to shine. Hitherto the many moonlit snow-peaks beyond the Gorner glacier had looked scarcely more substantial than floating clouds; but when the eastern stars had vanished, and the morning glow grew stronger, the Twins and Lyskamm began to assume the appearance of reality, and to shine yellow-white; while Monte Rosa, which was in complete shadow, was the coldest blue. At 4.30 a zone of deep blue circled round the western horizon, surmounted by one of lurid red, with pale blue sky above, while the lower zone, gradually disappearing, gave place to the deepening red. At 4.40 the summit of the Matterhorn was touched with the pink flush of sunrise; a few moments more, and the Lyskamm and the Breithorn had caught the glow: the crimson colour spread gradually over them, changed suddenly to golden yellow, and then faded into the common hues of day. Meanwhile the lurid red in the west slowly disappeared, and the sky gradually deepened into the intensest blue, supported all round the horizon by a zone of pale lemon-grey. I could not make out with certainty when the sun touched the Höchste Spitze or Nord End,—we were too completely on their western side.

At 4.45 we were fairly across the Gorner, and in the mid stream of the Monte Rosa glacier, off the rock called “Auf der Platte,” and, looking back, saw the cavalcade, somewhat disunited, advancing towards that point. The real work of the day was now commencing. Near the junction of the main and tributary streams the glacier channel is contracted, and the ice is riven by complicated systems of cross crevasses, dividing it into the blocks and pinacles known as seracs, and which here, in their fantastic forms and gigantic proportions, vied with, if they

did not surpass, the celebrated scenery of the Col du Géant. A Chamounix guide is always at home on the ice ; and Croz led the way, axe in hand, almost as if he had known the glacier from his childhood. Few occupations are so fascinating to a mountaineer as fighting his upward way through difficulties such as we had to contend with, and where each step is like a move at chess,—not to be made without considering its effect upon what is to follow. But the most delightful episode in this part of the expedition was afforded when, all other means of advance appearing hopeless, Croz boldly cut his way down to the bottom of a crevasse, and we walked along it for a considerable distance. It formed a long corridor with vertical walls, rising, in some places, twenty feet above our heads, glittering with delicate tints of green, fringed at the top with pendent icicles, and roofed over by the deep blue sky. This gave us an excellent opportunity of examining the stratification of the glacier,—a phenomenon to be carefully distinguished from the veined structure developed by pressure, usually at lower levels. The snow was disposed in layers parallel to the surface of the glacier, varying from a few inches in thickness to as many feet, and divided from one another by thin discoloured bands. These layers are generally considered as annual snow-falls, and some of them may probably have been so ; but it is obvious that a glacier may receive a coating of snow, which may subsequently be discoloured, more than once a year.

At 6.45 we were well out of the seracs, and halted for breakfast. The part of the glacier yet remaining to traverse rose up before us like a marble staircase, walled in on either side by frowning precipices of dark rock. Those of the Lyskamm on the right were seamed by ice couloirs, and crowned by threatening masses of snow, discharging

avalanches in quick succession with a noise like the rattle of musketry. Looking to the left, we discerned the Monte Rosa party like a line of black specks against the sky, and recognised the ringing voice of Lauener, who shouted as he went along. Our resting-place gave us a view of the Matterhorn very different from that presented in the vicinity of Zermatt, a huge flat-topped buttress appearing to support the mountain on the south. Bees, butterflies, and other insects are frequently seen at very considerable elevations, but almost close to our breakfast-place we found a stranger entomological curiosity. This was a great hawk-moth, lying dead upon the ice,—I believe *Sphinx Convolvuli*, or a closely-allied species.

At 7.15 we were off again, and made splendid progress; the snow was in perfect order, its surface hard and crisp, and rough enough to prevent the feet from slipping. In the upper part of the glacier are crevasses and snow-grottos of amazing size and beauty; happily they were all bridged, and there was not even danger enough to necessitate the use of the rope. The whole glacier surface was frosted together into a rigid mass, and was as yet untouched by the rays of the sun,—the great wall of Monte Rosa having hitherto extended over us its friendly shade. The Höchste Spitze was soon passed; after it the Zumstein Spitze; and we then arrived at the base of the Signal Kuppe, and hesitated a few moments as to the route we ought to take. We had the choice of three cols, each apparently leading across the rim of the great snow-basin of the glacier. The col immediately in front of us connected the Signal Kuppe with a snow-peak on the right, which looked so insignificant that we had no idea it was another of the summits of Monte Rosa. The other two were situated between this peak and the Lyskamm, and were separated from one another by a low dome of snow. I had not with

me Schlagintweit's map, which, although grievously incorrect in many particulars, would have been a great assistance; but I knew that the four northern peaks of the mountain lay along a line making an obtuse angle with the five southern ones,—the Signal Kuppe occupying the angular point,—and that the Lys glacier was nearly at right angles to that of Monte Rosa. It was clear, therefore, although the first col looked the most tempting, that our course was to turn sharply to the right, and pass as near to the Lyskamm as possible. But the col nearest to that mountain was cut off from us by an impassable crevasse, so we were forced to take the middle route. In a few minutes we had gained the ridge: the insignificant peak on our left was no other than the Parrot Spitze; somewhat in advance of it was the Ludwigshöhe, and before us, on the south, the snow-slopes of the Lys glacier. From the crest of the col we wound round to the right, climbed the dome of snow, and at 9.30 exactly we were standing upon its summit.

We were now on the highest point of the plateau of snow, which, stretching from the Lyskamm to the Parrot Spitze, divides the Monte Rosa from the Lys glaciers, and Switzerland from Italy. On the 31st of July, 1820, nine-and-thirty years before, Zumstein and ten companions had passed the night in a crevasse not many yards distant from the spot where we were standing. The view in the immediate foreground was highly interesting. Westward, a long and narrow arête of mingled rock and snow led up to the summit of the Lyskamm. Between the highest point of that mountain and a subordinate shoulder on the south, which terminates in the promontory of the Nase, Mont Blanc just peered above the hollow, and formed a picture of singular quaintness. Northward, we looked down upon the great basin of the Monte Rosa glacier, enclosed on the

left by the arête of the Lyskamm, and on the right by the Signal Kuppe, the Zumstein, and the Höchste Spitze; the black dots were still climbing along the edge of the latter, which presented a broad rugged wall of rock that entirely masked the Nord End. Southwards, beyond the Parrot Spitze on our left, the chain of peaks was continued by the Ludwigshöhe and the Schwarzhorn; the Vincent Pyramid, the top of which is not so high as the plateau, was, I believe, wholly invisible.

The distant view was still more charming, and on the north was absolutely cloudless, comprising all the mountain ranges in the vicinity of Zermatt, and extending to the Wildstrubel, Altels, and Blumli Alp, far away across the Rhone. In the south-west, the eye rested upon the magnificent cluster of the Graian Alps, at that time almost unknown: conspicuous among their many summits were the vast mass of the Grand Paradis, and the still more striking pyramid of the Grivola. Little did we think that two members of the Alpine Club were at the very moment climbing up it. In the south-east we ought to have looked upon the far-stretching plain of Piedmont, and even distinguished the houses in Turin; but a dense layer of white cloud was spread out horizontally before us, hiding Italy from view, and pierced only by the rugged peak of Monte Viso, which shot up through it a hundred miles away. What mountaineer could resist such a sight? I gazed with admiration on the noble pinnacle, and resolved that, if health and strength permitted, I would one day try to climb it. "If it were clear," said Croz, "we should see the Mediterranean;" and perhaps he was right. Genoa was only twenty miles farther off than Monte Viso, which was remarkably distinct, and we might have seen as far, unless the prospect were bounded by the Ligurian Apennines or Maritime Alps.

I carried no barometer in 1861, and a sympiesometer, by Adie, which I had with me, in consequence of a defect in construction had long ceased to be of use. As the only means of approximating to the height of the plateau, I mounted a pocket-level on the top of an alpenstock, and endeavoured to connect our position with a peak of known height. After several trials, I found that the optic axis of the instrument passed through the summit of the Rothhorn. The bearing of this observation on the determination of the height will be discussed hereafter.

We had so much time before us that the propriety of climbing some neighbouring peak was not long in suggesting itself. The arête of the Lyskamm did not look encouraging, but we could, with very little labour, have walked up to the top of the Parrot Spitze, and looked over into the Val Sesia. Croz, however, was averse to any such proceeding, alleging that, with an unknown glacier before us, our first duty was to secure our descent. I was at the time under the erroneous impression that Zumstein had encountered tremendous obstacles in his excursions, so that I acquiesced in the wisdom of the advice. I have never ceased to regret the excess of prudence, as I thereby lost an opportunity of examining the Italian side of the saddle between the Parrot Spitze and Signal Kuppe, and of ascertaining whether it would be possible to effect a passage across it direct from Alagna to the Riffel.

At 9.30 we roped ourselves together and commenced the descent. We found the slopes of the Lys glacier very different from those on the other side. Hitherto we had walked in the shade almost all the way to the plateau; we had now to traverse a snow-field softened by the morning sun, and producing a glare so blinding, that veil and spectacles combined were a very insufficient protection. We ran merrily downwards, often up to the knees in wet

snow, and occasionally plunging waist-deep into concealed crevasses. Passing the Vincent Pyramid, we made for a ridge of rock below, separated from that peak by the snow-slope which connects the *névé* of the Lys glacier with that of the Garstelet. The rock was found to be the Hohelicht. We landed on it at 11.15, flung off the rope, and called a halt for dinner.

We had another charming view from this position, the Combin and Velan having come into sight, and the noble mass of Mont Blanc towering proudly upwards at the extremity of the Val d'Aosta. The Italian valleys at our feet were filled with clouds, but we could just see underneath the roof of mist which covered the Val de Lys, and trace the line of the silver Lys, winding through meadows of delicious green. Being all of us unacquainted with the southern side of Monte Rosa, we were in some doubt as to our downward course. Southward, the view was completely intercepted by the main ridge of the Hohelicht, which rose several hundred feet above our heads; far down below, upon the right, was the Lys glacier, apparently very steep, and much crevassed and broken, and on the left flowed the glacier of Garstelet, presenting a gentle and unfissured snow-slope, terminated by some easy rocks. The latter route was at once chosen. At 12.15 we were off again: a swift glissade carried us over the snow, and we walked without difficulty down the rocks. We ought to have continued in the same direction to the Indren and Gabiet Alps, and thence by the path leading from the Col d'Ollen into the main valley at Edelboden. But, fearing we were in a branch of the Val Sesia, we crossed the Salzia Furke on our right, and descended upon the *châlet* of Cour de Lys, close to the termination of the Lys glacier,—a detour which probably lengthened our journey nearly an hour. We arrived at this spot at 1.30, and, soon starting off again,

worthily concluded our excursion by a delightful walk down one of the loveliest of the Italian valleys of the Alps.

It would be impossible to conceive a change more complete than that which we experienced in passing from the north to the south of the great Alpine chain. We had left in the morning the chill atmosphere and barren rocks of the Riffel, and we were now enjoying the soft climate of Italy and the exquisite verdure and beautiful scenery of the Val de Lys. Lofty cliff and noble pine forest, and foaming torrent, and huge erratic blocks, islands in a sea of green, are here thrown together by the hand of nature in exhaustless variety and profusion; and the effect of all this natural beauty is increased by the apparent comfort of the dwellings, and the bright and picturesque costume of the inhabitants. We passed La Trinité at three, and in another hour reached Gressoney St. Jean, with its cluster of white houses and elegant Italian campanile, situated in the midst of verdant meadows, on the banks of the foaming Lys. We walked through the little town, and exactly at 4.15 stepped into the comfortable Pension Delapierre, where we were warmly received by the proprietor, who displayed such rapture at the account of our excursion, that we thought he must discern certain commercial advantages from the opening of the new col. We were not a little gratified at the complete success of the expedition, and at the unexpected rapidity with which it had been performed. In little more than thirteen hours we had made the first traverse of the loftiest pass in Europe, at least 1000 feet higher than any passage previously effected across the Alpine chain, by a route conducting the traveller past every one of the nine peaks of Monte Rosa, and rich in scenery of the most magnificent and varied character. If the pass were taken in the opposite direction, it would be

wise to sleep on the Hohelicht, where a cabane ought to be erected, as it would be important to descend the Monte Rosa glacier before its surface became softened by the morning sun. Could we have counted upon such a camping place, I believe we could before nightfall have scored off all the peaks between the Zumstein Spitze and the Vincent Pyramid.

About the time of this excursion, the Rev. S. W. and Mrs. King were enjoying the hospitality of the Baron Peccoz at his hunting chalet at Salzen near to the Lys glacier, where Delapierre brought them tidings of the fact, that two Englishmen had reached Gressoney from the Riffel, by way of the snow plateau between Monte Rosa and the Lyskamm. At this absurd announcement, the Baron burst into a hearty fit of laughter, evidently relishing the joke that Delapierre had been made the victim of such a hoax. Vain were the assurances of Mr. King that English gentlemen always spoke the truth: the famed chasseur declared that he knew the glacier of his own mountain intimately, and that the thing asserted to have been done was absolutely impossible. At length Mr. King suggested, that if the passage had really been made, some traces of it would probably be still remaining, and the Baron consequently started next day for the Hohelicht, for the purpose of proving that such was not the case. On arriving at the spot, the deep furrow we had ploughed through the snow was still plainly visible, and there was no denying the fact that a passage, unknown even to so great a hunter, had been effected on his own domain. When Mr. King returned to Gressoney, the report he heard was that the guides had dragged their weary steps into the village an hour or two after the travellers, completely knocked up.

Before discussing the nomenclature and altitude of the

new pass, a brief history of the first ascent of Monte Rosa from the south will not be out of place.

The plateau was first reached in the year 1778* by seven chasseurs of Gressoney, under the guidance of Nicholas Vincent, the father of the first ascender of the Vincent Pyramid. There was a tradition that a fertile valley of the Valais, called the Hohenlauben, had been suddenly enclosed by the advance of a glacier, and so shut out from mankind. The chasseurs, incited by an old priest, undertook to search for it, and imagined they had discovered it when, on arriving at the plateau, they looked down upon the valley of Zermatt. They repeated the expedition in 1779 and 1780. From that year to 1819 nothing more was done. On the 5th of August in the last-named year, Nicholas Vincent ascended the peak which has since borne his name. On August 10th the ascent was repeated by M. Bernfaller, canon of the Great St. Bernard, who was at the time in parochial charge of Gressoney La Trinité. On the 12th the summit was a third time reached by Joseph Zumstein and Nicholas Vincent. On July 31st, 1820, Zumstein with two Vincents, an engineer from Turin named Molinatti, and guides and porters, making in all eleven, spent the night in a crevasse on the plateau, and the following morning made the first ascent of the Zumstein Spitze. In the above expeditions Zumstein and Vincent had passed the first night near the base of the Stollenberg, which entailed upon them an unnecessary traverse of the Garstelet glacier. In 1821 Zumstein shortened the journey by camping on the Hohelicht, and on Aug. 2nd in that year he made his second ascent of the Zumstein Spitze. On the 25th

* Von Welden, "Der Monte Rosa," Wien, 1824, pp. 123, 124. Compare also Saussure, "Voyages dans les Alpes," vol. iv. p. 373, § 2156, who, however, places the incident in 1783.

of the same month Von Welden climbed the peak which from his christian name is called Ludwigs-Höhe. On July 12th, 1822, Zumstein made his fourth journey, in which, after gaining the plateau, he was forced to retreat by bad weather. On the 1st of August he was more successful, and on that day he made his third and last ascent of the Zumstein Spitze.

The next actor upon the scene is Signor Giovanni Gnifetti, the curé of Alagna, who in 1834 opened the trenches against the Signal Kuppe, and whose expeditions were made, like Zumstein's, by way of the Lys glacier and the plateau. On the 27th of July, after nearly reaching the summit, he was driven back by bad weather. His second attempt, July 28th and 29th, 1836, was not more fortunate, as he was stopped for want of an ice-axe within half an hour of the top. The third attempt, August 12th and 13th, 1839, was frustrated by bad weather before he gained the plateau, and it was not until his fourth journey, August 8th and 9th, 1843, that his enterprise was crowned with success. The worthy curé appears to have gone about his work in a very deliberate manner, as it took him just nine years to climb a single peak.*

The ascent of the Vincent Pyramid by the Messrs. Schlagintweit on September 12th, 1851, completes the expeditions from the south, so far as I have any knowledge of them. I do not know whether the Parrot Spitze has ever been climbed.

On perusing the records of Zumstein's expeditions as they are recorded in the work of Von Welden, especially those undertaken from the Hohelicht, they appear to have been very straightforward pieces of business, and not to have involved danger or difficulty of any unusual kind.

* "Nozioni topografiche del Monte Rosa ed ascensioni su di esso di Giovanni Gnifetti, Paroco d'Alagna. Torino, 1846."

The Nord End seems to have been entirely unknown to Zumstein, who completed the nine peaks of Monte Rosa by including the Lyskamm in the number. The space between that peak and the Parrot Spitze being thus a part of the mountain, was called by him the Grosses Plateau of Monte Rosa, a nomenclature in which he has been followed by Gnifetti and Schlagintweit. Now, however, that the Lyskamm is held to be a distinct mountain, the above term is somewhat inappropriate, and as it is unknown at Zermatt and rather cumbrous, it is necessary to choose a better name. I propose to call it the *Col de Lys*. It is true that the Lys glacier has two branches east and west of the Lyskamm, which unite into a common stream at the Nase. According to Zumstein, the eastern and western affluents are the Salzia and Felik glaciers, while it is only the united stream that bears the name of Lys. I do not see, however, that later writers have adopted these terms, and if they had it would not affect the propriety of my designation. I have been informed that at Zermatt the col has been called the Silber Pass, a name which it is not desirable to perpetuate, as the ridge between the Höchste Spitze and Nord End has long been known as the Silber Sattel.

The probable altitude of the pass is the next matter for consideration. Zumstein took barometrical observations in all his excursions, and appears to have conducted them with considerable care. Most of his heights are the mean of the calculations from the three bases of Turin, Milan, and Ivrea. Unfortunately his observation on the Vincent Pyramid was affected by some special error, the resulting altitude being nearly 1000 English feet too great; a circumstance which has thrown undeserved suspicion on his other calculations. Singularly enough, although in going and returning he crossed the plateau

eight times, he only made one observation upon it, whereas he made three upon the Zumstein Spitze, one at each visit. That on the plateau was taken July 31st, 1820, and gives an altitude of 14,100 English feet. The first observation on the Zumstein Spitze, taken the following May, gives 15,214 feet, 210 feet in excess of 15,004 feet, the recent trigonometrical determination of M. Bétemps. The second and third calculations are 15,012 and 15,046 feet respectively, and are very near the truth.

The levelling operation I made upon the col showed that it was upon the same apparent level as the summit of the Rothhorn, a mountain about twelve miles distant. The height of this peak, as determined by M. Bétemps, is 13,852 English feet. The combined correction for curvature and refraction due to a distance of twelve miles is eighty-two feet, and, subtracting this from 13,852, we have 13,770 feet as the height of the col. It is clear, however, that a barometrical determination ought not to be impeached by so rough an observation as the one here described, made by an instrument without a telescope, and where a small deviation from horizontality would produce a very serious error in the result. Happily, we are in possession of a far more satisfactory check to Zumstein's measurement, as I shall proceed to show.

The passage of the Col de Lys once opened, other travellers were not slow to take advantage of the new route. On August 13th, 1860, two parties ascended from the Riffel to the head of the Monte Rosa glacier. The first, consisting of the Rev. Leslie Stephen and Mr. Robert Liveing, with Melchior Anderegg as guide, climbed the Zumstein Spitze, which had not been visited since Zumstein's last ascent in 1822. The peak gave them no trouble, and they found the iron cross safe upon the top. The second party was composed of Messrs. E. B. Prest,

J. L. Propert, and an American gentleman from Boston, Mr. J. K. Stone, with the guides Johann zum Taugwald, Moritz Andermatten, and one of the Simonds of Chamonix. These gentlemen made the passage to Gressoney, starting from the Riffel at 3.45 A.M., reaching the plateau at 10 A.M., and arriving at St. Jean at 4 P.M., thus accomplishing the journey in twelve hours and a quarter, including a rest of half an hour on the col, and of an hour at the Hohelicht. It will be observed that they effected the descent in three-quarters of an hour less time than we did, owing to their having taken the shortest cut from the Hohelicht to Gressoney. On the 29th of the same month the Rev. T. G. Bonney and Mr. J. C. Hawkshaw, accompanied by Michel Croz, ascended to the col from the Riffel, returning the same way. They started at 3.45 A.M., reached the summit at 9.5 A.M., and regained the hotel at 1.15 P.M., — a remarkably quick performance. These expeditions indicated the desirability of following the Monte Rosa route over *Auf der Platte* before diverging to the glacier, thus avoiding the most difficult seracs, and of selecting thenceforward the Monte Rosa side of the glacier rather than that under the Lyskamm, which, though it appears more tempting, is dangerously swept by avalanches.

In 1861 the expeditions to the Col de Lys were commenced by Mr. Tuckett. On the 15th of June, in company with Messrs. C. H. and W. J. Fox, and the guides J. J. Bennen and Peter Perren, he crossed to Gressoney, returning to the Riffel a few days subsequently by the old Weiss Thor. On the 22nd the same party made the first attempt on the Lyskamm by the eastern arête, but, prevented from reaching the summit by the state of the snow and violent wind, they climbed the Signal Kuppe instead, afterwards descending directly to-

wards the Gorner glacier, without returning to the col. On July 29th the Rev. Leslie Stephen and Mr. Reilly made the second attack on the eastern arête of the Lyskamm, an enterprise again frustrated by the state of the snow. Descending on the southern side, they rounded the Nase, and crossed the Bettliner Pass into the Val d'Ayas, returning to the Riffel the following day by the Schwarz Thor. Next comes the successful ascent of the Lyskamm on Aug. 19, described by Mr. Hardy in the following paper; and a passage of the col from the Riffel to Gressoney, made by Mr. A. P. and the Rev. H. Whately with François Devouassoud of Chamounix on Aug. 30, concludes the list for 1861.

Among such a crowd of climbers it is disappointing to find that there should have been only one to undertake scientific observations. It is to my friend Mr. Tuckett, whose untiring energy has added so much to our knowledge of the Alps, that we owe the only accurate hypsometrical observations made upon the col since the time of Zumstein, and I am greatly indebted to him for his permission to publish them in this paper.

On June 15th he spent an hour and a half upon the col, and at 11 A.M. he registered the following observations:—

Barometer reduced . . .	. 456.00 Millim.
Boiling-point (Therm. No. 1) .	. 187.35 Fahr.
" (" No. 2) .	. 187.5 "
Air temperature . . .	. 2.5 Cent.

The mean of the boiling-points converted by Regnault's tables into equivalent barometric pressure gives 456.4 millim., a near coincidence with the actual barometer reading.

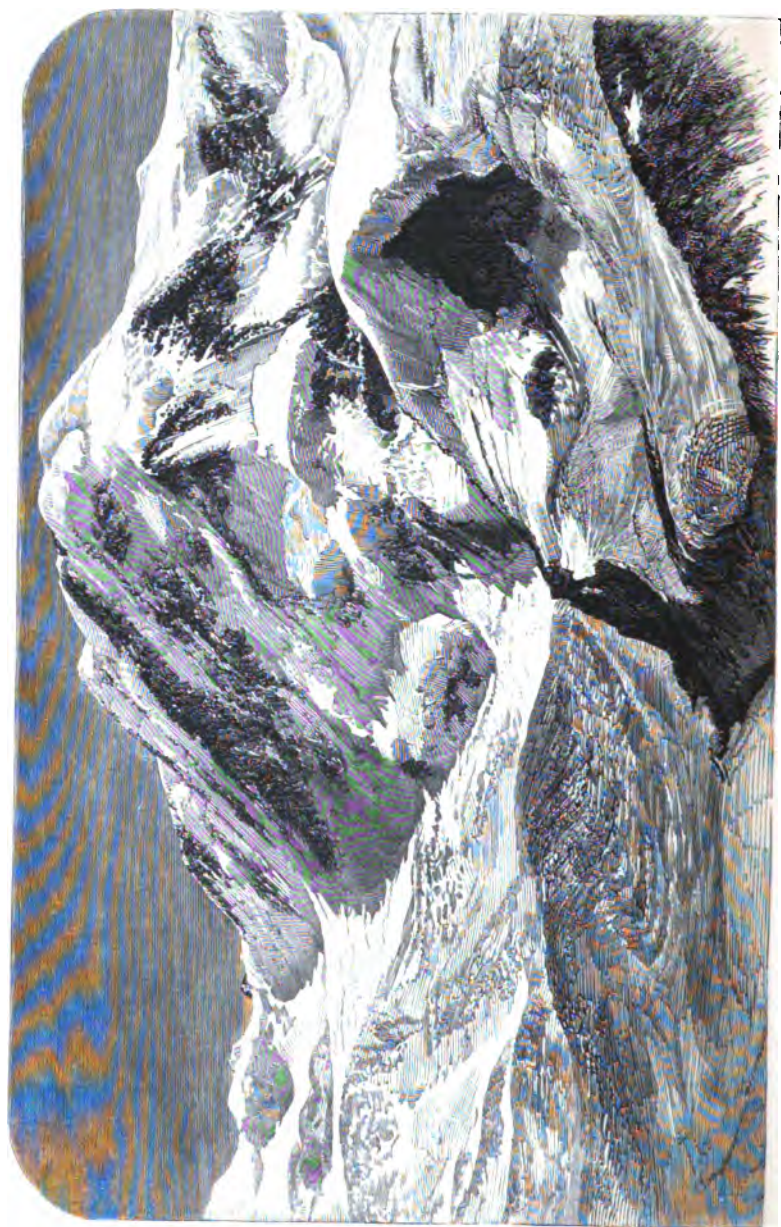
Comparing these observations with corresponding ones at the Great St. Bernard, and employing tables based upon

Laplace's formula, Mr. Tuckett deduces the following altitudes above the Mediterranean :—

Barometer	14,053 English feet.
Mean of two boiling-points . .	14,028
Mean	14,040·5

If the comparison had been made with Geneva, Aosta, or Turin, the heights would have come out somewhat greater, so that Mr. Tuckett's calculations establish the accuracy of Zumstein's results. On the whole it will certainly be within the mark to put the height of the Col de Lys at 14,000 English feet.

We found the Pension Delapierre at Gressoney a most agreeable resting-place, and it was not without reluctance that, on the morning of the 24th, we quitted that charming spot. On ascending the Col de Ranzola, I carefully reconnoitred the western branch of the Lys glacier, which descends from the depression between the Lyskamm and the Twins, and felt convinced that a passage from the Riffel to Gressoney might also be effected over that part of the chain. After descending from the Ranzola, we crossed the Col de Jou to Chatillon, and arrived the same evening at Aosta, where we met the party just returned from the Grivola. A successful passage of the Col du Géant, and an equally successful ascent of Mont Blanc, during which we had the good fortune to see a magnificent Aurora from the Grands Mulets, closed our Alpine work. Passing into Italy again by the Bonhomme, Iséran, and Cenis, we rested from our mountain labours, and spent a week of delicious idleness at Turin and Genoa before returning to England.



THE LYSKAMM, FROM THE GORNERGRAT.

3. THE ASCENT OF THE LYSKAMM.

BY JOHN FREDERICK HARDY, B.D.

"I SAY, old fellow, we're all going up Monte Rosa to-morrow: won't you join us? We shall have capital fun."

"What! is that Hardy? Oh, yes, do come, there's a good fellow."

With these and similar kind invitations was I greeted as I emerged from Seiler's hotel at Zermatt on a pleasant morning in August, 1861, to join the crowd of loungers who were enjoying the warm sun, and snuffing up the pure mountain air that, defiant of dirty châteaux and still dirtier inhabitants, rolled down into the little village. Before I had time to answer, a voice, afterwards discovered to be J. A. Hudson's, was heard to mention the Lyskamm, upon which hint I spake.

"Ah, the Lyskamm! that's the thing: leave Monte Rosa, and go in for the Lyskamm; anybody can do Monte Rosa, now the route's so well known; but the Lyskamm's quite another affair."

"Yes, indeed, I expect it is. Why, Stephen couldn't do it."

"He was only stopped by the bad state of the snow."

"Well, Tuckett failed too."

"He was turned back by a fog."

"So may we be."

"Certainly we may, also we mayn't; and in the present state of the weather the latter's the more likely of the two."

The end of the discussion was that Professor Ramsay, Dr. Sibson, T. Rennison, J. A. Hudson, and W. E. Hall, agreed to join with me in seeking a highway up the Lyskamm, while Galton and Gray remained faithful to their original intention of climbing the Rosy mountain. My five friends pressed upon me the leadership and management of the expedition; and my first act of sovereignty was the very agreeable one of receiving the homage of two new subjects. C. H. Pilkington and R. Stephenson, with whom I had crossed the Alphubel, and spent several pleasant days in the neighbourhood of Zermatt, but who had threatened to leave for England that very afternoon, came to ask me if I would take two more. "Yes, to be sure," I replied, "if you're the two." And having thus raised the party to eight, I set to work at once to seek the best guides.

Jean Pierre Cachat, of Chamounix, and Franz Lochmatter, of Macugnaga, were soon engaged. The latter introduced a companion, Karl Herr, of whom he gave so good an account* that I gladly put him on my list; still I was without any local guide save Stephen Taugwald, who was engaged to Dr. Sibson; and though Stephen is a very decent fellow, he's not made of the sort of stuff for a leader.

"But why has not Monsieur engaged Pierre Perren?" inquired Cachat.

* Lochmatter and Herr had been engaged about a week before I met them to bring an Italian gentleman over the Weiss Thor. When they were in the very worst part of the passage they were overtaken by a violent thunder-storm. The Italian lost all heart, threw himself on the ground, declared he could go no further; but begged his guides to leave him and save themselves. They tried reasoning with him in vain; and finding it utterly impossible to induce him to move, agreed to carry him by turns on their backs. This feat they successfully accomplished, and brought him safely down into the valley. Hearing this account from Lochmatter, I felt quite certain that Herr was a man to suit us. He fully came up to my expectations.

"*Il n'est pas ici.*"

"*Mais, oui, Monsieur, il est ici,*" replied a voice which there was no contradicting, for it was Perren's own; and amid a shout of laughter he pushed his way through the little crowd, and brought his jolly, ugly, honest, intelligent face in front of mine. He had returned unexpectedly to Zermatt in consequence of the illness of the gentleman with whom he had been travelling, and was thus enabled to place his services at our disposal.

We had now, in my opinion, force enough; and as the guides insisted on my naming the terms of our engagement, I offered to give them forty francs apiece in any case, but fifty if we reached the summit, which arrangement, perhaps somewhat too liberal for any but first-class men, they gladly accepted. Joseph Marie Perren, a brother of my friend, was then engaged to act as porter for twenty francs; forty eggs were ordered to be boiled hard, and a few loaves to be set aside; for meat, cheese, and wine, we knew we could depend on the inn at the Riffelberg.

In the cool of the evening we strolled slowly up the slopes on which this tiny auberge stands; and having ordered dinner and beds, of which latter article we actually obtained seven, while the eighth man had a mattress on the floor, we sent for the guides to discuss the hour of starting. We English were all for midnight; but the natives insisted that the moon would not give us sufficient light to traverse the glacier, and that there was no advantage in starting till two hours later. A lengthy debate ended in a compromise: 30 minutes A.M. was to be the time. A light repast, followed by a cigar and a *petit verre*, insured us three hours of sound sleep.

A few minutes after twelve I awoke, looked at my watch by the moonlight; and after that short struggle between inclination and duty, which the best regulated mind

endures when its proprietor is snugly ensconced between the blankets, I jumped out of bed, and proceeded to rouse the rest. One or two I found already stirring; but the majority, guides and *cuisinière* included, still slept the sleep of the just, which, according to Alphonse Karr, is but that of the man "*qui a bien dîné*." About 12.40 we got our breakfast, at which Galton and Gray assisted. They had slept in *bags* on the hill-side, by way of preparing for the ascent of Monte Rosa. Galton is an old campaigner; but from the chilling effect produced on Gray, I should say it was about the worst preparative he could have selected.

Another Monte Rosa party made their appearance towards the end of our meal, one of whom amused us mightily by complaining bitterly of the noise made by our arrival on the preceding evening. In order to secure his full measure of sleep he had gone to bed at 5 P.M., under the singular delusion that when that fact was known, all the business of the house would be conducted in a whisper. Poor little fellow! he had been soon undeceived.

What with one delay and another it was 1.40 A.M. before we actually started; so that, after all, the guides gained their point within twenty minutes. The moon was brilliant and all but full; but, being somewhat low in the sky, she invested us with tremendously long shadows; and as including our Monte Rosa friends, we were nineteen in all, and were for the most part walking in single file, the effect was decidedly spectral.

There was nothing novel in the early part of our route. We reached the Gorner glacier at 2.40 A.M., and ran rapidly over its surface till the moon sank behind the Breithorn, when we found the deep shade rather troublesome. However, we arrived at the Auf der Platte at 4.15

without any mishap, except the temporary disappearance of a porter, who had wandered from the main body. Here we made a *cache* of some of our provisions, bade *bon voyage* to Gray and Galton, and started on what was to us an unknown land, or rather sea,—the great Monte Rosa glacier,—which, pouring down its frozen billows from the Lys Col, separates the snow-covered cliffs of the Lyskamm from the naked precipices of the mountain whence it derives its name.

By this time day was rapidly approaching, and Ramsay called our attention to the colour-effects behind us, which were among the most beautiful I have ever seen. The whole of the western sky was, in its lowest band, deep purple, which passed gradually into the richest crimson, and that again through orange into pale yellow, which mysteriously blended with the pure blue overhead. In the midst of this glare of colour stood up the Matterhorn, grim, ghastly, inexorable. The rocks of the Breithorn, on the contrary, and the snowy peaks of the Zwillinge, assumed a bright green, complementary to the prevailing crimson tone, the green of the rocks being much darker than that of the snow, and in some places changing very strangely into what may be termed a re-complementary red. This transient vision immediately preceded the rising of the sun, and disappeared as his earliest rays smote the mountain-tops.

At 5 A.M. we divided ourselves into the two parties, which had been previously arranged by lot, as we were far too numerous for one rope. The first subdivision fell in in the following order,—Perren, Hardy, Lochmatter, Ramsay, Stephenson, Hudson, Herr. The second consisted of Cachat, Rennison, Sibson, Taugwald, Hall, Pilkington, and young Perren. Then it was discovered that there was a supernumerary porter, name and ability alike unknown,

who had been pressed into our service in the morning, and for whom no arrangement had been made. Neither party were very anxious for his company; but at last he was tied to the tail of No. 1.

And now the work began in real earnest. The snow was in delightful condition; but the glacier was cut up by innumerable crevasses into the most superb seracs, and we had to thread our way as through a labyrinth. Backwards and forwards, now right, now left, we doubled like a Cambridgeshire hare; or rather as we wriggled in and out, with the head of our long party going perhaps south, and the tail north or east or west, we must have looked at a distance like a gigantic snake winding along among the everlasting snows. In general No. 2 followed quietly in the footsteps of No. 1, but once they had the audacity to select their own route,—a breach of discipline which could not be overlooked, especially as they had obviously taken the best line of country, and were actually in advance of us. With a few severe words, received, I fear, with derisive cheers, we passed again to the front, and gave them no second opportunity of repassing us.

The inclination of the glacier varied through almost every conceivable angle, from 1° to 360° ; but the snow was so crisp and pleasant that we had scarcely a step to cut. We had originally intended to follow the usual route to the Lys Col, and then bear away to the right till we reached the lower end of the Lyskamm arête; but about 7.30 Perren pointed out to me a rather stiffish snow-slope, lying to our immediate right, by which we might *possibly* reach the desired point at once, and thus save, at the very least, an hour's fatigue. Still the slope was steep, and we knew nothing of what crevasses or bergschrunds we might find higher up. Was it wise to leave the certain slow for the uncertain quick? While Perren and I were discussing

this weighty question, Cachat came up and suggested the very same route. This was enough for me; I acknowledged the omen, and decided for the short cut. Some of the party looked a little astonished when told where we were going, but they set gallantly to the work without a moment's hesitation. Away we all floundered through the snow, which was not quite as hard as we could have wished; but by judicious zigzagging, and by adopting that "*haustum longum, haustum fortem, et haustum omnes simul,*" which Lord Dufferin so forcibly recommends, we gained the top of our slope and the base of the arête in less than an hour.

We had taken a slight breakfast while among the seracs, but we now settled down to the substantial meal of the day. The knapsacks were unpacked, eggs, meat, bread, and cheese devoured with avidity, and washed down by a delicious beverage invented by one of our party, and henceforth to be known as the *Sibson mixture*,—red country wine and Swiss champagne combined in equal proportions.

Breakfast finished, I addressed my followers, and very nearly excited a mutiny by suggesting that, if any one doubted his power of *last*, he had better remain on this plateau, as there could be no turning back on the arête. I am proud to say that my suggestion was received with the contempt it deserved. In fact, such strong language was used with regard to all laggards, that I am inclined to think that even the supernumerary porter, had he understood English, would have felt it his duty to proceed further. As it was, we left him alone in his glory, smoking the pipe of idleness. Unless his meditations were of a more exciting character than I suppose, he must have been rather cold before we returned to him.

At nine o'clock, after a short *reconnaissance*, Perren started ahead and went up the arête in magnificent style,

kicking and cutting steps with a skill and rapidity which I have seldom seen equalled, stopping only now and then to shout down to us a hoarse query as to the state of the snow above him, lest he should unwarily tread upon an overhanging cornice; and on receiving a satisfactory answer, turning to his work again with a wild halloo. The first subdivision followed close behind, Lochmatter, who had taken Perren's place in the rope, improving the steps as we advanced. No. 2 had split into sections in order to obtain greater freedom of action, but we all kept pretty closely together, each man looking to his predecessor's heels, and rising steadily step by step.

The arête proved very irregular in its construction. Generally the two side slopes swept upwards at high angles, and terminated in a very sharp and narrow ridge. When this was the case, we walked just below the edge on the right hand, resting our alpenstocks on the ridge, and commanding a full view of both slopes, down which the dislodged snow fell rapidly. Sometimes this edge widened out, and we walked along it, as on the top of a wall. At one such place we took the angles with a clinometer, and found the angle of ascent to be 36° , while on each side the snow trended away at 52° . Sometimes we came to a great gap, and had to descend some twenty or thirty feet to rise again; for we dared not take a line sufficiently low to avoid these breaks. Occasionally, but very rarely, the rock was laid bare; in general it was well covered with snow. This in parts was very dry and slithery*, and

* I have been in the habit of using the word *slithery* for many a long year, but I am not sure that it is to be found in any dictionary, or will be generally intelligible. In very dry weather, with the wind in the north or east, it frequently happens that, as the day warms, the snow does not so much melt as to form itself into a dry powder, losing almost entirely its power of cohesion. In this state it is said to be slithery. Mr. Editor tells me that slithery is only a corruption of sliddery, which, according to him, is a good English word.

once or twice during the ascent I felt a little nervous about our return, when the sun should have gained more power. I was afraid lest the cohesive power of the surface snow should be almost entirely destroyed, and that we should be compelled to cut deep into the frozen portion beneath during our descent. This I knew to be necessarily a long and tedious process, and likely to be somewhat trying to the nerves of the less experienced members of the party. I had not, however, reckoned as much as I might have done on the service to be rendered us by our invaluable ally *Regelation*. From the size of our party each step got so thoroughly well kicked and trodden down, that they became perfectly hard and durable, and with but few exceptions were as serviceable in the descent as in the ascent.

After about an hour and a half's hard climbing we reached a small plateau, from which the summit itself was visible; and though we saw that there was still serious work before us, we felt certain of victory, and indulged in a preliminary dance of triumph.

And now onward for the final assault. The slope becomes steeper and narrower; happily there is little wind, but the air is perceptibly keener; the snow is harder and harder; kicking will do but little now; the axe is in constant requisition. Hark! what is that Perren says about the *Gipfel*?

"*Herr Hardy, wollen Sie der Erste seyn, der seinen Fuss auf den Gipfel setzt?*" — "He wants to know if you'd like to be the first to set foot on the top."

"Oh, by all means,—*Ja gewiss, Peter.*"

And so in another minute (at 11.40 A.M.), Peter stands aside, and I find myself at the top of all, 14,889 feet above the level of the sea. On come the rest of the conspirators, crowding eagerly on to the tiny plateau, which

will barely hold us all at the same time. There is universal shaking of hands, and patting of backs, and noisy congratulation. As for Perren he is wild with joy, and shrieks and chuckles, and seizing both my hands dances round me; then he puts his arm round my shoulder, and pats and fondles me, as though he were caressing a young horse, that he had tried and not found wanting.

At last something like order is restored, and Herr strikes up a German hymn, which rings out clear and pleasantly in the calm air, till, at a hint from Perren, he changes into "God save the Queen," and out burst fourteen voices, if not in perfect harmony, at least in perfect goodwill; and as we sing with uncovered heads, the noble old anthem fills our English hearts with happy thoughts of home and fatherland, and of the bright eyes that will sparkle, and the warm hearts that will rejoice, at our success.

It was my good fortune last summer to obtain an almost uninterrupted view from every col and summit that I reached; and the Lyskamm was no exception to this general rule. Close opposite to us sprang up the Höchste Spitze of Monte Rosa, only topping us by some 350 feet, and surrounded by its lesser pinnacles, many of which lay far beneath us. Farther away, the gracefully curving Mischabel Hörner, the Dom, and Täschhorn, caught the delighted eye, and led it onward, till it rested on the massive mountains of the great Oberland range, which filled up all the northern horizon. In the west rose the Matterhorn, but no longer in majestic isolation. The Breithorn, the Dent d'Erron, the Dent Blanche, and the Weisshorn, stood up to dispute his empire, and to form as noble a group of peaks as ever gladdened the heart of a mountaineer. Far away in the south-west, their

great distance clearly marked by the peculiar golden colour of their snows, gleamed the domes and the aiguilles of Mont Blanc; while in the south, the dark purple hills of Italy, here and there flecked by snow, and sometimes rising to the rank of mountains, as in the case of the Grivola, the Grand Paradis, and the Viso, seemed to repeat themselves, ridge behind ridge, in infinite succession. Towards the Grisons and the Tyrol hung a few fleecy clouds, but not of sufficient density to obscure the glories of the Bernina and the Orteler, nor of the steep cliffs that tower above the Splugen and Bernhardin passes.

For somewhat more than half an hour we feasted our eyes with this magnificent panorama, till some one complaining that he felt cold, there was a general cry for more of the Sibson mixture. Perren, who knew the difficulties that were yet to come, was for drinking no more till we were fairly off the arête; but his prudent counsels were laughed to scorn by the others, who declared it would be a *sottise* to bring wine to the top of a mountain, and then carry it down untasted. After all two bottles among fourteen were not likely to affect our steadiness very materially; and the slight stimulant would probably do more good than harm. At all events the mixture was taken as before; and then at half an hour after noon commenced the really anxious part of the expedition,— the descent of the arête.

Retaining Perren and Herr to form the first and last links of the leading party, I sent Lochmatter to assist Cachat in the conduct of the second detachment, and left the third in charge of Taugwald and Joseph Perren.

Slowly and steadily, carefully trying each step before trusting to it,— sometimes, when the slope allowed, walking boldly forwards with alpenstocks thrown well back,— at

others, turning face to the snow, and letting ourselves down, hand under hand, while we looked through our legs for the foot-holes, — now and again one or another of us slipping away, but held safely up by the rope and the steady anchorage of his comrade's alpenstocks — here and there the steps of our ascent, all melted and useless, and our progress broken into a series of short halts, while the axe was doing its work, — with all our faculties, mental as well as bodily, in full tension, — with no words uttered but the occasional "*arrêtez*" or "*en avant*," — still downwards, downwards for nearly two hours.

Now, however, we see a black spot in the plateau we have been slowly approaching; the black spot moves, — it shouts, — it is the supernumerary porter; a few minutes more of caution, and we are receiving his congratulations, and, what is more interesting to us, making another dive into the contents of the knapsacks.

It is all plain sailing now; we may laugh, and talk, and sing as we please; the business is over, the Lyskamm is conquered, without an accident, and without a break-down, by a larger party than ever before attempted a new ascent. We found the snow soft and yielding on the slope leading down to the Monte Rosa glacier; and as we zigzagged downwards in our old steps, the foremost men got pretty heavily besprinkled by the masses which were dislodged by their followers. This, however, only gave rise to a little vigorous chaff, and we were soon doubling again amongst the seracs, and fighting our way in the half-melted snow to the Auf der Platte, which we gained at 4.35 P.M.

And now we are once more among vestiges of civilisation. Fragments of egg-shells, chicken bones, and broken bottles, tell of the numerous picnics that have been celebrated here.

"By the bye, Perren, we have a *cache* here ourselves."

"*Ja, Herr*, we have four bottles of wine here."

"Out with it then, by all means: here's the corkscrew."

What is this sudden horror that comes over his face? Has he fallen unexpectedly upon the traces of some terrible or inhuman crime? It is but too true,—robbery of the most aggravated character,—our *cache* has been discovered, and one of our cherished bottles has been feloniously emptied!

'Oh, villain! wheresoe'er thou be,
That drained'st our flask of purple wine,
Deem not that greedy act of thine
Shall always 'scape the penalty.'

So sang the poet of our party; but poetical justice is not always done, and up to the present moment the aforesaid villain has escaped detection. Perhaps the bard alluded to the remorseful stings of conscience, perhaps to the retributive acidity of the grape.

We finished the three bottles that had been left to us; and crossing the Gorner glacier, with no worse misfortune than an occasional shoeful of water, we reached the Riffel Inn at seven. Here we paid our guides the fifty francs apiece which we had promised, giving Perren an extra *douceur* of ten francs, which he had well earned by his careful leadership throughout.

We decided on pushing on to Zermatt at once; and although one or two of the party lost their way in the woods, we were all comfortably reunited at dinner soon after nine o'clock. The news of our success had preceded us, for we had been seen, when on the summit, by some Englishmen who were on the opposite ridges of Monte Rosa. The hearty welcome of Seiler, who, according to his wont, insisted upon treating us to his best wine, and the warm congratulations of our English friends, espe-

cially of the ladies (who, God bless them for the dear inconsistent creatures they are! always entreat you not to run into danger, and always are intensely delighted when they think you have disobeyed them), brought a most agreeable day to a most agreeable conclusion.

4. THE COL DES JUMEAUX.

BY WILLIAM MATHEWS, JUN., M.A.

AFTER the opening of the Col de Lys, I had frequently speculated on the possibility of making the corresponding pass from the Riffel to Gressoney, on the opposite or western side of the Lyskamm. I was therefore much interested at hearing from my friend, Mr. Tuckett, that he had ascended from the Riffel to the depression between the Lyskamm and the Twins, and that he concurred with me in the opinion that the descent upon the Italian side would be quite practicable. Mr. Tuckett had reached this spot on the 16th of July, 1860, in the course of an attempt to reach the summit of the Lyskamm by way of the western arête; but finding the arête very narrow, and the snow extremely insecure, he was obliged to return without accomplishing his object.

It was not until 1861 that an opportunity occurred of testing the accuracy of our conclusions. My friend, Mr. F. W. Jacomb, and myself had been making rather a long stay at Aosta, at the excellent hotel of Jean Tairraz, which had been our head-quarters for exploring some of the little-known and picturesque recesses of the Graians. We were bound to Turin and Monte Viso; but being anxious to make a diversion to Zermatt before journeying southwards, we resolved to attack the supposed pass. Mr. Tuckett, having established the practicability of the northern half of the excursion, it was clear that Gressoney

was the proper starting-point, especially as, in case of a successful passage, we had an easy return route by the St. Théodule.

On the evening of the 20th of August, we settled our accounts with Tairraz, and ordered a carriage to be ready on the morrow to take us to Chatillon,—Jacomb cruelly insisting on an early start, in order that we might have the cool of the morning for the enjoyment of the charming scenery of the Val d'Aosta. At 4.30 A.M. on Wednesday, the 21st, we had quitted Jean's hospitable roof, and in that dreamy, semi-conscious state which results from slumbers prematurely broken, were rolling out of Aosta, leaning lazily back in the carriage, with our two guides—Jean Baptiste Croz and Michel Croz, of Chamounix—sitting on the seat before us. Doubtless the spiritual nature of my companion, set free from the gross influence of the flesh, drank deeply of the beauty of the lovely valley; for in a few minutes he became quite insensible, and only recovered his consciousness as the carriage drove up to the door of the Hôtel du Palais Royal at Chatillon.

It was eight o'clock when we arrived, and we stayed an hour and a half for breakfast. Leaving a part of our baggage behind, but retaining a mercurial barometer by Casella, which I had already compared at Geneva and St. Bernard, and which I subsequently compared with the Academy instrument at Turin, we quitted Chatillon at 9.30, and walked down the high-road as far as St. Vincent, where we struck into the track which leads to the Col de Jou. It was pleasant walking enough while under the shade of the noble chestnuts which clothe the mountain-side; but when we got among the villages and open fields above, the heat was fearful, and diminished the pleasure with which, from time to time, we looked back upon the broad and fertile valley which lay stretching

many a league behind us, the winding Doire and white villages shining beneath the burning sun. At 12.20 we reached the summit level, which is covered with pine forest, intersected by open sweeps of lawn; and it was with no little satisfaction that we extended ourselves upon the softest of couches, under the refreshing shade.

Half an hour soon sped away, and we commenced the descent into the Val d'Ayas towards Brussonne, one of the most picturesque villages on the Italian side of Monte Rosa. The principal auberge at that place is the now well-known Lion d'Or, said by Professor Forbes to have afforded but indifferent accommodation when he stayed at it in 1842; but I entertained so grateful a recollection of my reception there in 1859, that it required very little pressing to induce me to assent to the proposal that we should rest and take lunch before continuing our journey. We entered the inn at 1.30, and in less than half an hour were seated at table, with a bowl of soup before us and sundry savoury dishes. We were then tempted with all sorts of delicacies in the way of fritters, which were replaced by a pile of fruit. More than one bottle of wine having been consumed, and the hottest period of a cloudless day in a broiling Italian valley not tending to produce activity, it is scarcely surprising that it was 4 o'clock before we began to realise the fact that we were going that night to Gressoney. Now, however, not a moment was to be lost, and we tore ourselves away from the Lion d'Or. I recommend both it and its proprietor, Jean Alexandre Vuillermet, prince of *cuisiniers*, to the patronage of the members of the Alpine Club.

The ascent to the Col de Ranzola from the Val d'Ayas is rather tedious; but the view from the summit is amply repaying,—embracing the northern slopes of the Graians, and the Italian side of Mont Blanc. To see Monte Rosa,

which is not visible from the col itself, it is necessary either to descend towards the Val de Lys or to climb to the top of the Combetta, a grass-covered mountain to the south of the col, and rising some 700 or 800 feet above it,—an excursion of which the Rev. S. W. King has given a charming description in his “Italian Valleys of the Pennine Alps.” As we did not reach the col until 6.15, the Combetta was out of the question; but I delayed a quarter of an hour to take a barometer observation, which gives the following results:—

Compared with	Turin	7034 English feet
„	Geneva	7203
„	St. Bernard	7134
	Mean	7123

Professor Forbes gives the height at 7136 feet, a very near coincidence with the St. Bernard determination.

We had not been descending many minutes before the Vincent Pyramid came suddenly into view, and then the whole chain as far as the Twins,—a glorious expanse of mingled snow and rock. The depression by which we proposed to effect the passage across the ridge was clearly visible,—the western arm of the Lys glacier, which led up to it, looking particularly difficult. There was, however, no time for anything but the most cursory examination. Quitting the path, we descended the extremely steep grass slopes by a series of glissades, an amusement in which our guides were more proficient than ourselves: they were soon out of sight in front, while we, missing the proper turn to Gressoney, arrived at the bottom of the valley some distance below the village. It was now very nearly dark, and no path to be discerned. We scrambled across the bed of a torrent strewn with great stones, and then happily came upon a foot-bridge over the Lys. The large lighted building on the opposite side was, I felt convinced,

the Pension Delapierre; we walked straight up to it, the conjecture was verified, and at 7.15 we stepped across the threshold. Our guides did not arrive till an hour later, having waited for us on the road, expecting to be overtaken.

The inn was full of Turinese, driven out of the city by the scorching heat which had prevailed for several months, and every bed-room was occupied. But Delapierre was equal to the occasion. He received us with the greatest cordiality, and had a large room in the roof, hitherto unfurnished, hastily fitted up for our accommodation. On entering the *salle* we found it crowded with visitors all seated at supper; among them several very good-looking ladies, evidently members of some of the wealthier families of the valley. They wore the picturesque costume of the Val de Lys, consisting of a skirt, a highly ornamented bodice, and white linen sleeves.

As we had nothing to do on the 22nd but to walk up to the highest *châlets*, there was no necessity for starting until the afternoon, and I employed the welcome leisure of the morning in making the sketch which forms the vignette to this paper, and in considering the best route for our expedition. The principal feature in the views from the neighbourhood of Gressoney is the snowy mass of the Lyskamm which occupies the head of the valley, supported on this side by the great buttress ending in the Nase, and dividing the two branches of the Lys glacier. It is not easy to choose a point of view which commands the whole chain between the Vincent Pyramid and the Twins; but that which I selected, a few hundred yards westward of the river, very nearly does so. The snow-peak on the extreme right of the sketch is the Vincent Pyramid, and the mountain in the centre is the Lyskamm. The hollow between the two is probably a part

of the glacier a little to the south of the actual Col de Lys, or Grand Plateau. Immediately to the west of the Lyskamm lies apparently the col we wished to cross; but the actual point at which we made the passage is the next depression on the left. The summit of Castor is still more to the left, and is hidden by the mountain in the foreground. The western arm of the Lys glacier appearing very steep and broken, we agreed with our guides that the wisest course would be to climb up to the comparatively level snow-field which covers the ridge separating the Val d'Ayas from the Val de Lys, walk along it towards the base of the Jumeaux, and then select the easiest point for crossing the main chain.

The next steps to be taken were to prepare the commissariat, engage a porter to go with us at least half-way, and settle where we were to pass the night. At so good an hotel the first was a matter of no difficulty, and Delapierre having announced that we wanted assistance in carrying the provisions, two men presented themselves for selection. We chose the stronger looking of the two, and acceded to the request of the other that he might go with us *en amateur*. Our porters were of little use beyond the mere carrying of their burdens, as they had never been upon the ice, and proved remarkably ignorant of the topography of the upper part of the valley. Delapierre recommended us to sleep at the chalet of Cour de Lys, which is close to the end of the glacier, but we were anxious if possible to find some higher camping-place.

We quitted the hotel at 2.50 P.M., Delapierre, on wishing us *bon voyage*, adding to our stores, by way of present, a bottle of *vin blanc de Chambave* to drink the health of the new col. In the course of the afternoon we were discussing the feasibility of ascending the Lyskamm, which looked irresistibly tempting, when we saw before us

a single traveller with his guide walking in the opposite direction to ourselves. It proved to be my friend Mr. Nichols, who had come from Zermatt by way of the Théodule and Cimes Blanches, and who asked us if we had heard the news. On our replying in the negative, he said, "Tyndall has done the Weisshorn and has gone to try the Matterhorn, and Hardy and a large party have just been up the Lyskamm." The last-named mountain looked far less interesting now that its prestige was gone; but we were all the more anxious to make the new pass and join our friends in Zermatt. At 5.30 we reached the Cour de Lys, and, perceiving that there was no higher châlet in the direction we were going, resolved to make it our quarters for the night.

This châlet must be extensively patronised by excursionists to the Lys glacier, as it is furnished with the most effeminate luxury. It actually contains a bed and a deal table and benches, to say nothing of a stock of cooking and other utensils of superior quality and workmanship. While the guides were superintending a brew of hot chocolate and milk, I secured a barometer observation with the following results:—

Time, 6 P.M.	Turin	6511 English feet
	Geneva	6621
	St. Bernard	6582
	Mean	6571

Zumstein's determination is 6778 English feet, but it is probable that his observation was taken somewhat nearer to the glacier.

There was a good deal of cloud about in the evening, but by midnight it had disappeared, and when we left the châlet at 2.20 on the morning of the 23rd, we had a clear sky and a brilliant moon. Passing at once from the east to the west side of the Lys by a wooden foot-

bridge, we turned our faces northwards, and in a few minutes arrived at an ancient lateral moraine of the Lys glacier, now completely stranded and grass-grown. Just within it, however, was a moving moraine, with several blocks of prodigious size riding down upon it. We walked along the crest of the older belt of rocks, looking across the glacier to the Nase, and more distant outlines of the Hohelicht and Telschen, and watching the approach of dawn. At 4.20, the shadows cast by the moon had become very faint, and at 4.30 had entirely disappeared; at this time the sky between the Telschen and Hohelicht was light orange, and between the latter peak and the Vincent Pyramid a pale violet of the most exquisite loveliness. We followed the moraine until we had passed on our left the base of the Felikhorn and reached a ravine beyond it, which appeared to afford an easy means of climbing on to the snow plateau extending from that peak to the Jumeaux, and so enabling us to avoid the ice cascades of the western arm of the Lys glacier. We struck into the ravine, climbed the rocky slopes that enclose it, gained the plateau exactly at 6, and rested for breakfast.

At 7 we were off again, and the remainder of the ascent proved perfectly easy and entirely devoid of incident. Our route lay along the gently ascending snow-slope until we entered a broad corridor, with the snow-ridge separating us from the Val d'Ayas on our left. We walked along the corridor nearly to the foot of Castor, where it turns at right angles, and following the lead thus indicated were making for the head of the Lys glacier, when we came upon a steep slope on the left, leading up to a depression in the main ridge, and walled in on either side by vertical cliffs of snow, bristling with stupendous icicles. A crevasse circled round the top of the slope and ran down alongside the eastern snow-wall; but we descried a bridge,

cut our way up to it, and in a few minutes were looking on the Gorner glacier.

It was not without surprise that we discovered that we were upon the true col, the apparently lower level of the part of the chain nearer the Lyskamm, as seen from Gressoney, being merely an effect of perspective. During the ascent Jean Croz had been indulging a favourite propensity of predicting difficulties,—a bad habit in guides which ought always to be discouraged, and for which we were obliged to rebuke him. Refusing to place reliance on my unsupported assurance that the Glacier des Jumeaux was particularly easy, he went forward to pioneer the descent. We, on the other hand, knowing that the Twins were as yet unclimbed, had resolved to bag them both, and Michel was already at work with his axe cutting steps along the ridge. It was 9.45 when we gained the col; we left the porters to take care of themselves, and hastened forward after Michel. There was a strong north wind blowing, and it was bitterly cold,—circumstances which make walking along a knife-edge and poking one's toes carefully into foot-holes not the pleasantest of recreations. The way is short, however: we climb one peak, descend into a hollow, mount again, and finally, at 10.45, stand on the top of Castor, the highest point between the Lyskamm and the Matterhorn, fully convinced that we have at last both the Twins in our pockets.

The summit we have gained is bare of snow, and consists of mica schist, very rich in mica, and split up into a quantity of thin slate-like pieces. While Michel is engaged in the erection of a stone man we look round upon the prospect. Switzerland is quite clear, and the view not materially different from that afforded by Monte Rosa, which has been described so often. On the Italian side we look across to the Graians, no longer an unknown land,

and can distinguish the Rutor, Mont Pourri, Grivola, Grand Paradis, Tour St. Pierre, and Punta Lavina. More to the left, with the Viso proudly preeminent, is the noble amphitheatre of the Cottian and Maritime Alps, circling round the plain of Piedmont, and blending into the distant Apennines east of Genoa, and we clearly discern the gap in the chain, over which lies the road to Nice by the Col di Tenda. The great plain itself is not the least interesting feature in the panorama: its towns and rivers are just visible, but very indistinct, and it is covered all over with small white clouds, similar in size and shape, and at equal distances asunder.

The barometer was now set up on the southern side of the peak, about twenty feet below the summit, so as to be sheltered from the wind. At 11 A.M. I carefully observed the height of the mercurial column, the detached thermometer at the same time indicating an air temperature of -1° Cent. The following are the results:—

Turin	.	.	.	.	.	.	13,867	English feet
Geneva	.	.	.	.	.	.	13,880	
St. Bernard	.	.	.	.	.	.	13,835	
Mean	.	.	.	.	.	.	13,867	

Adding twenty feet to the mean, we get for the height of Castor by my barometrical determination 13,877 feet, a result very nearly identical with that obtained trigonometrically by M. Bétemps, who gives "Zwillinge, Sommité occidentale," 13,879 feet.* The barometer having been replaced in its case, we deposited two minimum thermometers in a hole in the southern face of the cairn and closed up the opening with a stone. The first was an Alpine minimum, marked A. C., No. 376, and the second a

* "Extrait de la Triangulation Fédérale exécutée en 1859, par Bétemps, Ingénieur Géographe."

thermometer with a Fahrenheit scale, and the spirit coloured pink. Mr. Casella had made me a present of the latter instrument when I left England, saying that he thought it would be less likely than the others to catch the bubble complaint. The two instruments at the time of deposit registered respectively 3° and 38° . It was now 11.30, and our hands being completely benumbed by handling the instruments, we retraced our steps along the arête, and regained the col at noon.

We found the porters exactly in the position in which we had left them two hours and a quarter before, and Jean Croz returned from his investigations. The latter, on being asked if he had discovered the difficulties he was in search of, replied that he had not, but that he had no doubt they would be met with lower down. The wind still continuing decidedly unpleasant, we descended into the crevasse, and entering a beautiful snow-grotto which afforded us complete shelter, unpacked the provision-knapsacks and turned our attention to dinner. Delapierre's *vin de Chambave* was promptly uncorked and pronounced admirable, and the health of the Twins and the new col, not forgetting that of the donor, were drunk with considerable enthusiasm.

I deeply regret to have to confess that, partly from laziness, partly from the inconvenience of the position, and partly from the dislike of again benumbing my fingers against the cold metal, I neglected to make a second observation with the barometer, so that I am unable to contribute any materials for determining the height of the col. Mr. Tuckett, as usual, supplies us with the required information, which he has kindly placed at my service.

In his expedition of July 16, 1860, he observed the barometer at the spot in question at 11.45 A.M.; the

mercurial column reduced to zero stood at 467·66 millim. and the air temperature was 7·5° Cent.

Comparison with Geneva, Aosta, and St. Bernard, give the following results :—

Geneva	13,580 English feet
Aosta	13,577
St. Bernard	13,393
Mean	13,517

Here, as is frequently the case, the altitude deduced from St. Bernard is less than that resulting from a comparison with lower stations, but the difference is unusually large, even for a time of day when we should expect it to be a maximum. Considering that it took us an hour to climb from the col to the summit of Castor, I estimated the difference in level at about 500 feet; if this be correct, the St. Bernard determination must be nearer the truth than the others, and we may in round numbers put the height of the col at 13,400 feet. The doubt introduced by the discrepancy makes it desirable that the observation should be repeated, and it is the more to be regretted that I neglected to do so myself.

Although Mr. Hardy had forestalled us on the Lyskamm, and we had consequently abandoned all idea of attempting it, we had none the less attentively scrutinised the western end of its Italian face. Our examination convinced us that there was a perfectly easy way to the summit from the head of the Lys glacier, a few hundred feet below the col, and that if Mr. Tuckett, instead of attempting to cut his way along the arête, had descended to that point before his final attack, his enterprise in all probability would have succeeded. It is not, however, likely that this route will ever become a favourite. If Gressoney be taken as the starting-point it necessitates an immense detour, unless, indeed, the direct ascent of the western arm of the Lys

glacier should prove easier than it looks. If, on the other hand, the expedition be undertaken from the Riffel, it involves descending the col on the upward journey, and what is much worse, ascending it in returning,—a waste of labour which would be extremely disagreeable.

At 12.45 we dismissed our porters and commenced the descent of the Glacier des Jumeaux, keeping on its eastern side under the Lyskamm, where it appeared but little broken. Glissade followed glissade in delightfully quick succession, and we thought a few minutes more would bring us without an obstacle down to the main stream of the Gorner, when our guides suddenly pulled up. On joining them we found ourselves on the edge of a cliff of névé about a hundred feet high, and a wilderness of seracs below us. However fond Jean might have been of prophesying difficulties, he was never backward in grappling with them when they arose, and after retracing our steps for a short distance, he and Michel diverged to the westward and tried to discover a lead. Eventually we had to cross the whole of the glacier from the foot of the Lyskamm to the Schwarzberg, and then double back again nearly to the point we started from, but on a lower level. This part of our journey was entirely among the seracs, which consist here of gigantic cubical blocks of stratified snow, and are, I think, the finest in the vicinity of Zermatt.

At 2.30 the difficulty was conquered and the Gorner glacier gained; and the exertion having given us a fresh appetite, we rested to consume the remainder of the provisions. In the course of our descent we had made a most unwelcome discovery. Having been firmly convinced that we had climbed both the Jumeaux, and assuming—although I ought to have known better—that the western summit was the higher one, it was with no little surprise that we saw the familiar form of Pollux gradually rising into view

westward of his taller brother, and still unclimbed. The fact is that, being only about the same height as the col, we had entirely overlooked it from the top of Castor, and what we had taken for it was only a small protuberance of Castor himself.

What is the exact relation which Pollux holds to his twin brother and the Schwarz Thor I am unable to say, and it requires further investigation to decide; but I believe he is quite invisible from the Val de Lys. I have, however, no hesitation in pointing out an inaccuracy in the map of Schlagintweit, who has placed Pollux where Castor ought to stand, and not given space enough between Castor and the top of the Lyskamm,—an error which unduly narrows the western arm of the Lys glacier as compared with the eastern one.*

At 3.15 we commenced the passage of the Gorner, and had not taken many paces before we arrived at one of the longitudinal canals which form part of the drainage system of this glacier. It was some ten feet deep, far too wide to jump, and the water rolling along it was a positive river. All at once our company became separated, Michel starting off down the glacier and Jean and Jacomb up it, trying to find a place where the stream was either bridged or narrow enough to leap with safety. Not liking to make a detour, and seeing a spot where the channel was wider and its banks somewhat lower than elsewhere, I jumped in and waded through, and Michel, having crossed farther down, he and I raced one another across the ice, a contest in which it is no disgrace to say that he had the advantage, as he is the fastest walker in Chamounix. Exactly at 4 I stepped upon the Riffelberg, whose soil I had last trodden on the way to the Col de Lys in 1859. At 5 I entered

* The 23rd sheet of the large Sardinian map, in which this part of the chain is depicted, is altogether beneath contempt.

the Riffel hotel, and a few minutes after the other half of the party came up. We left again at 6, and at 7.20 reached Zermatt, where I received a cordial greeting from a circle of Alpine friends.

The entire expedition thus occupied seventeen hours, including stoppages of four hours and a quarter, the passage from Cour de Lys to the Riffel having been effected in ten hours of actual walking. The excursion is an interesting one, both in itself and as completing the tour of the Lyskamm; but its charms are certainly inferior to those of the companion route by the Col de Lys. It only remains to give a name to the new pass; I propose to call it the Col des Jumeaux.

Two idle days at Zermatt sped pleasantly away. On the 26th we crossed the St. Théodule to Chatillon, drove on the same evening to Ivrea, and early the next morning arrived in Turin.

5. THE NORD END OF MONTE ROSA.

BY EDWARD N. BUXTON.

I ARRIVED at Zermatt, accompanied by my friends Mr. Cowell and my brother, without any decided plans, but ready for any exploration in that district that still remained after its diligent working by Members of the Alpine Club.

From the Col de la Valpelline on our way to Zermatt, we saw the Lyskamm standing out grandly, Monte Rosa being hidden by a buttress of the Matterhorn. The excelsior spirit was deeply stirred within us, but our ambition was doomed to disappointment; for on arriving at the Hotel Monte Rosa we heard that Mr. Hardy had been beforehand with us, and had that morning started for the Lyskamm with a large party.

In the evening they all came down to Zermatt, when we found they had been on the top of the Lyskamm at the very time that we were looking at it, and planning to be there ourselves.

It had been one of the hottest days of the unusually hot summer of 1861, and the party had been *en route* eighteen or twenty hours: though unwilling to asperse the character of fellow A. C's., I am bound to state there was not a drop of champagne, soda-water or beer to be had in the hotel for several days afterwards.

The next day it poured, and in our heart of hearts we

were not sorry for it; for the previous seven nights had been spent in châteaux, or in the open air, and a good revel in hotel luxuries was most acceptable. Besides this, at the Hotel Monte Rosa, one is sure to meet many old friends, and make many new ones. Discussions on boiling-point thermometers, "piolets," and the best shape of knickerbockers, are of absorbing interest on these occasions. Altogether I look back on that one wet day as one of the pleasantest in our month among the mountains.

In the evening the weather gave signs of clearing; so we lost no time in ascending to the Riffel, on the chance of its being fine enough for work next morning. Our hopes of the Lyskamm were blighted; but among the Monte Rosa group, the Nord End was still untrodden by human feet, and we determined therefore to do our best to leave the marks of our boot nails on its summit.

The early morning shewed a thick fog, but when I looked out at about 8 o'clock I found the mist drifting past the window in broken patches, and the sun gleaming through; as if it meant to shine out in earnest presently. I soon roused Cowell and my brother, and we had time to reach the top of the splendid ice-fall of Mr. Ball's Schwarz Thor, look down the purple length of the Val d'Ayas, and get back again before *table d'hôte*.

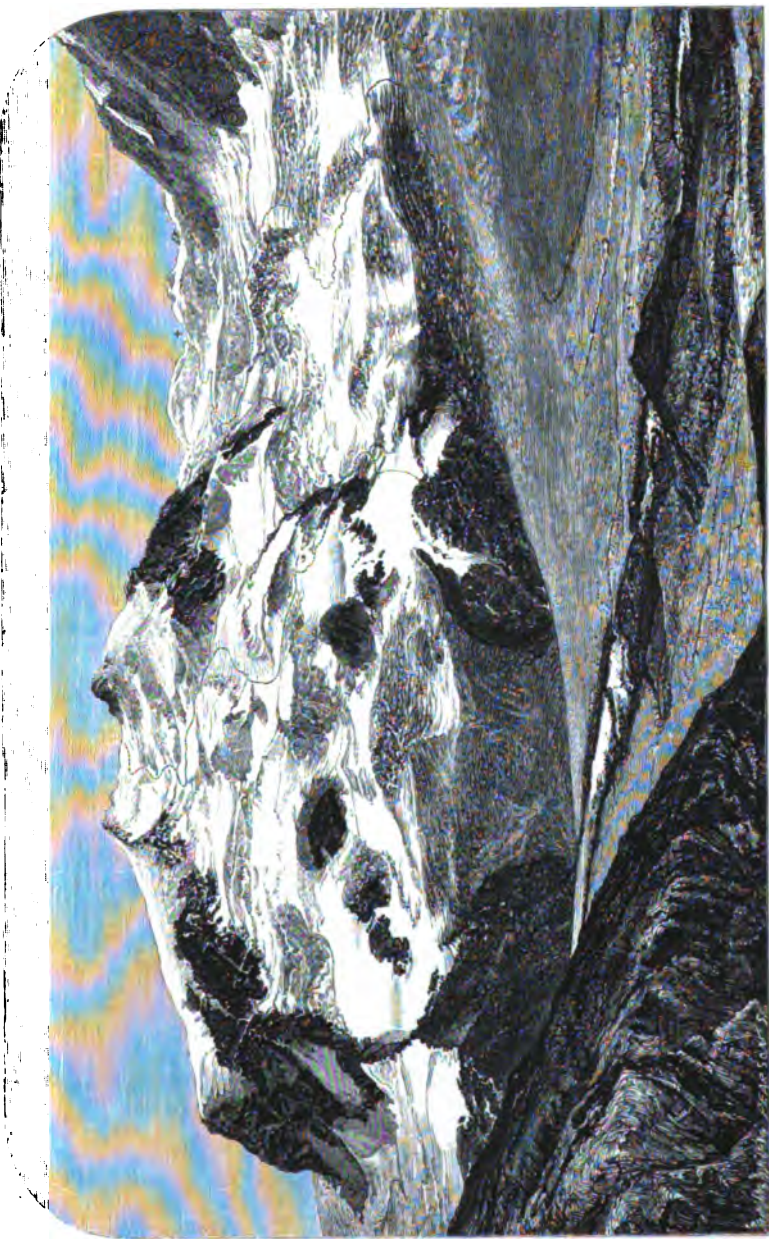
We were struck that morning by a remarkable instance of the error committed by unaccustomed eyes when judging distances in the mountains. A gentleman who accompanied us across the glacier, wanted to know, on parting, if we should not turn to the left on getting to the top of the pass, and, keeping along the crest of the Lyskamm, return by the summit of the Rosa? He was much astonished when we told him that it would be rather beyond the limits of a morning walk.

We all had a great wish to see the view, so rarely obtained, of the Italian plains from Monte Rosa, and as the next day promised to be magnificent, and the view from the Höchste Spitze would be more uninterrupted than that from the Nord End, and as we were sure of getting to the top of the former, while the latter was doubtful,—we determined to devote the next day to the beaten track. We started soon after midnight, in order to reach the top before the morning heat covered Italy with its accustomed haze: we got what we wanted, but we paid dearly for it. It was an intensely cold night, and our stock of heat was hardly sufficient to last out, till the sun came to give us a fresh supply: we dared not stop for breakfast, which would no doubt have helped to keep out the cold, but were obliged to fight against it as best we might. Several times I caught myself falling asleep, and stumbling backwards on the steeper parts of the slopes; our boots were frozen literally as hard as bricks, and before we reached the Saddle, two of our three guides were frost-bitten: we managed to recover them, however, in the usual way; and as we were now in bright sunshine, we kept on to the top without further inconvenience. Once there, I sat down on a rock that had been well warmed by the sun, the position was so comfortable that I stayed in it for nearly two hours, not thinking of my feet, one of which rested against a heap of melting snow. The consequence was severe frost-bite, and when I got up I found my foot entirely numb, though I had not felt any sensation of cold the whole time I was sitting. I restored the circulation without much difficulty, but the evil had taken deeper root than I thought, and in the evening the great toe had swollen to double its natural size. Cowell and my brother spent the next day in sauntering about the Gorner Grat, while I hobbled down to Zermatt, and turned up a dirty

little old man who acted as parish doctor. He pounded some common glue, melted it, and applied it all hot to the affected part. On my return to the Riffel, I repeated the remedy two or three times; but, from my own experience, I cannot recommend it to others. The guides, however, all agreed that it was the best remedy. They told us of only one other equally effectual, which was, to sit with the foot in a glacier pool, till it was frozen again: a treatment which I recommend to the notice of homœopathists. My boot certainly could not go on to my foot in its present state; so, with the assistance of our Chamounix guide, Payot, I boldly cut away the leather from the whole of the fore part of it, leaving only the sole, which I scooped out into a hollow to receive the swollen digit;—with this scientific arrangement I hoped to be able to try the Nord End the next day. These hopes proved too sanguine, however, for on getting up in the morning, I could not wear the boot without so much pain as to put walking out of the question; and I was obliged to turn grumbling into bed again, after seeing the others start. Some ladies kindly lent me a horse in the morning, and I rode up the Gorner Grat, *à l'invalidé*, to watch their progress. I must own it was not with unmixed sorrow that I found all the mountains covered with stormy clouds down to a level of 11,000 or 12,000 feet; for I thought it likely the Nord End would not fall a victim that day, and I might yet have a chance of trying it with them on Monday. They had already disappeared under the shroud, and there was nothing to watch but Mr. Mathews' track, of a day or two old, from the Col between the Lyskamm and the Twins, our own on the Schwartz Thor, and somebody else's on the Lys Pass. My two companions returned early in the afternoon, looking very weatherbeaten. They had got as far as the ridge joining

the Höchste Spitze and Nord End, when the storm of wind proved too much for them. There was no immediate danger, and they would have gone on a little farther at any rate, if Mathew Zum Taugwald (alias Old Tug), had not been seized with a panic and began shrieking, "*Nous mourirons tous, nous mourirons tous!*" And when a guide does that, of course one cannot force him to go on, however unreasonable his fears may be.

When my friends reached the hotel again they were rather tired of the sight of the long weary slopes, but out of compassion for me they kindly agreed to waive their prejudices, and have another try on Monday, by which time I hoped my foot would be again in working order. Perhaps Old Tug may have been right on this occasion. We certainly found him steady enough in the tracks he knew. We were determined this sort of thing should not happen again, and fixed to do without Zermatt men, and take only Payot, as cautious and "judgematical" a man as one could wish to see, though he chaffed Old Tug unmercifully for his fears. On Sunday the weather had again settled itself, and the mountain stood out clear and sharp in the sunshine, which we took advantage of to make a careful survey of the route, from the gap under the Riffelhorn. I had inspected it from the Höchste Spitze, and thought the best way would be to turn to the left when below the Saddle, and reach the northern point of the arête of the Nord End, which would probably prove very similar to that of the Höchste Spitze. The only serious obstacle of this route was a great bergschrund, extending under the whole length of the arête, and over which I could then discover no certain passage. This was not the only route open to us. The ice-ridge that joins the Höchste Spitze and Nord End, appears from the Gorner Grat to be a flat col. It is in reality an exceedingly thin wedge, flattened,



MONTA ROSA, FROM THE CORNERGRAT.

it is true, at its southern end, into a small col of a few yards broad, but through the remainder of its length becoming increasingly narrow as it approaches the Nord End. Once reach any part of this ridge, and it must be *possible* to get along it. This on the whole seemed the surer way, though the other *might* have been shorter and easier, and my companions therefore chose it on the Saturday, and as they had met with no insurmountable difficulties as far as they went, we saw no reason to change the plan of attack, when we renewed the attempt on the Monday. As we had only one guide, and we did not want to overload him, the commissariat arrangements were soon made. Each one carried a thick slice or two of bread and meat in his pocket, which arrangement had a double advantage. It diminished the guide's load, without inconveniencing us, and enabled each man to refresh himself when hungry, without stopping the whole party and unpacking the knapsack. The route pursued for the first two hours to the Auf dem Platte on the southern side of the Gorner Glacier, is too well known to need further description. The morning was clear and cold, patches of cloud, detached from heavy masses that hung about the Rympfischhorn and the Strahlhorn, drifted along in the north wind, that was hardly felt by us on the glacier. They disappeared as they left the mountain, but condensed again on reaching the chilling neighbourhood of Monte Rosa, and hung dark and threatening over the long back of the Lyskamm. A similar shroud clothed every larger mountain in sight. A north wind is always favourable, but the whole appearance so closely resembled that which had ushered in the bad weather of Saturday, that my companions were far from hopeful. Still it was our last chance, and we determined to persevere. Our progress was slow, for both my brother and myself were somewhat unsound in our legs, he with a slightly sprained ankle, and I with my

frozen toe bandaged in many folds of a bit of red carpet. "*Doucement et toujours*" is, however, an admirable motto during a long ascent, and the necessity of keeping to it was probably in our favour on this occasion. The high wind during Sunday had obliterated the beaten track up the snowy slope, but knowing the way well enough we had no need of it. For about three quarters of the distance from the Auf dem Platte to the Saddle we followed the usual route, then struck across the mountain to the left, finding here and there, in sheltered parts, the traces of the ascent of the previous Saturday. On coming under the cliffs that run down from the Nord End, we halted for a few minutes, and again considered the possibility of ascending from that side. In spite of some very steep rock-climbing to begin with, we thought it might prove accessible, but the previous route was the more certain, and by that we again started. Trudging on again, we reached a great mass of ice that had fallen from a cliff on our right. Under its shelter we halted, and made a frugal meal off our bread and butter, drank a bottle of wine, and left another for our return. As the cold was great, and the wind and clouds were increasing, we put on a few extra articles of clothing, such as flannel shirts over our waistcoats, and woollen socks over our gloves, with holes cut for the thumbs. I had carried off a thick coarse blanket from my bed, through a hole in the centre of which I pushed my head, and enclosed the flowing ends in my belt, while my companions enveloped themselves in their more ornamental but not more useful Scotch plaids. The least elegant part of our costume was the handkerchief that each tied across his face, to protect nose and ears from frost-bite. Payot then led the way, I followed, Cowell brought up the rear, my brother marching between us, as he was the only one without an axe. The first obstacle we met with after zigzagging up

for some way, was a small crevasse, the upper edge of which required much chopping before it was reduced to a form at all fit to be climbed. The snow was in perfect condition, and though very steep, it was easy to kick our footsteps with only occasional use of the "piolets." We now struck straight up towards the peak, hoping to save the long detour to the right that had before been taken. Our work, however, was not to be cut short in that way, and we were soon brought to a check by a large bergschrund, which is to be clearly seen in every photograph taken in 1861, running up in a slanting direction from almost below the Nord End towards the Höchste Spitze.

It stood us, however, in good stead, for when we reached it, it was hollowed out into a long cavern of the form of the letter C. A more beautiful resting-place could not be imagined. The wall, never reached by the sun, was of deep transparent blue, while, from the roof above, hung down a forest of long clear icicles, each adorned with two or three lace-like fringes of hoar-frost. We had to sweep them down with our poles to get in, and then found ourselves entirely sheltered from the wind that raged without. By kicking our feet against the hard sides we soon restored circulation. Some twenty feet to the left, the lower jaw of the crevasse rising steeply nearly met the upper, which we hoped to cut away and surmount. Payot chopped away vigorously for some time; but on gaining a view of the upper surface it was so nearly perpendicular that we determined to proceed southwards along the bergschrund in search of a more hopeful spot. On leaving our fairy grotto, each in turn had to jump down about four feet to the snow, which seemed to offer a sound footing. It bore us all safely till Cowell leapt down, when the snow gave way, and he lost his foothold. The axe which he drove into the snow was coated with a thin film of ice and slipped

through his fingers, and down he slid till stopped by the rope. It was a proof of the almost perfect security afforded by a rope when rightly used. We much grudged having to skirt the crevasse, as every step took us farther away from the object of our ambition, but nowhere could we cross till we reached the top of the ridge connecting the two peaks at a point about three quarters of the distance from the Nord End, which was the highest point reached on the previous Saturday, by my companions. Through the thick clouds they had caught a glimpse of some rocks which they then supposed to be the Nord End itself. Now, however, the clouds had blown over, and we saw that they were midway between the two great peaks of Monte Rosa. They are clearly seen in all photographs taken in 1861, but in the cold season of 1860 the melting of the snow was not sufficient to expose them.

We now set to work vigorously along the ridge. Every step had to be cut, and as the ice was as hard as rock, and as the wind blew with a fury we had never experienced, our progress was far from rapid.

The brilliant sunshine and fierce freezing wind were in strange contrast. Often when the wind was most furious we had to halt and prop our right knee against the icy wall to prevent being blown over the threatening precipice that forms the Italian side of the mountain.

For an hour we worked along this ridge before reaching the rocks, which we found to project only a few inches from the ice; but it was a shelter not to be despised, though only to be enjoyed by throwing ourselves down flat on our faces, in which position, exposed to sunshine, and hidden from the wind, we kicked back a little circulation into our benumbed feet and fingers. Then on again for another two hours exposed to the wind, the ridge becoming more and more narrow, and the side

steeper along which we had to go, for the crest itself in most parts overhung the precipices.

At last the rocks were won at one o'clock. I detached myself from the rope and clambered up the remaining thirty or forty feet of rough jagged rock to the last peak, and secured the highest fragment of stone as a reward for being the first man there. Then, with Payot's assistance, I built up a small cairn round a short pole, on which we hoisted a red handkerchief as a trophy.

The others soon followed to enjoy a view, clearer, if possible, than that seen from the *Höchste Spitze* a few days before. In other respects it was much like the view from that point, but it wanted the noble chain of mountains to the South, which were cut off by the large bold curve of the "*Kamm*" itself, rising like a gigantic crest from the snowy mass of the mountain.

On setting up the boiling water apparatus, we were dismayed to find that among the thermometers the only one available for the greatest heights had been left behind. We were thus unable to determine the elevation of this our only new peak.

After three quarters of an hour on the top, and among the sheltering crags just below it, we again roped ourselves together, and commenced our retreat in the reverse order to that of our ascent. The wind was as high as before, but the steps were large and well cut, and away we went, too fast this time to feel the cold. Leaving the ridge we took to the steep slopes, and soon after reached our bottle of wine under the boulder of ice, having descended in fifty minutes what had taken us full four hours to ascend.

Having divested ourselves of our extra clothing, we proceeded again down the long weary slopes now traversed for the eighth time by my brother and myself. According to the established custom of the country, we halted

again at the Auf dem Platte, and finished the small supply of provisions that had been left there. The plain glacier was now before us, after which came the narrow dusty path up the opposite mountain, whence we looked a last farewell to the brave old mountain now bathed in ruddy glory by the rays of the setting sun, which threw the long bold shadow of the Matterhorn far up the glacier at our feet. Reluctantly turning our backs upon it, we hurried on to the hotel. The excursion had occupied sixteen hours and a half, including nearly two hours for halts. The evening closed in upon us, enjoying that happy mixture of health and fatigue that can discover for itself the truest luxury even among the rough and crowded comforts of the *salon* in the Riffel Hotel.

CHAPTER VI.

THE NORIC ALPS.



1. THE GERMAN ALPS.
2. THE ASCENT OF THE GROSS GLOCKNER.

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1. THE GERMAN ALPS.

BY WILLIAM BRINTON, M.D.

For many years it has been my habit to spend a few weeks in each summer among the German Alps. Preferring those regions to Switzerland, I have repeatedly traversed their mountains and passes, alone and on foot, superadding to the rare pleasures of fresh air and exercise the more exciting amusement of path-finding, a pursuit which, even amid Alpine fastnesses, is, to those who join early taste with long experience, perhaps scarcely more dangerous than fox-hunting or other recognised amusements of similar character.

After an interval of twelve years, I once more found myself, on August 1861, near the Gross Glockner, and in weather which promised some amends for the disappointments I had formerly suffered, by allowing me at last to make the ascent I had twice been obliged to forego.

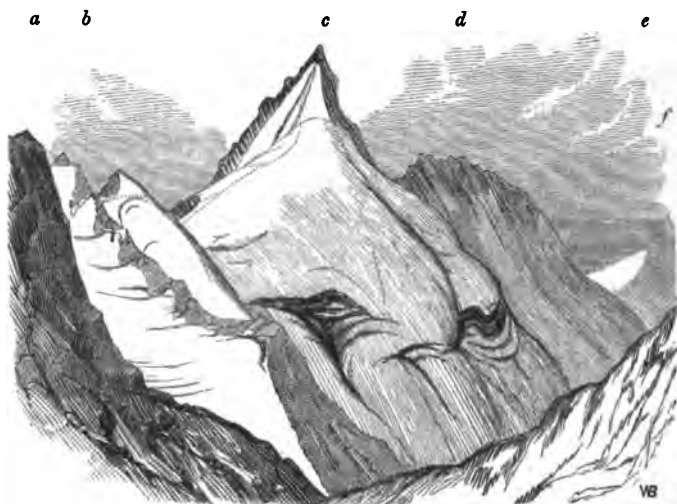
The Gross Glockner may be regarded as a very accessible peak, that offers nothing to deter an average pedestrian. It is about 12,790 English feet in height, and consequently overtops by 150 feet the Orteler Spitz which was formerly considered the highest peak in Germany. It rises from a mass of mountain and glacier, forming part of the main chain of the Alps, 100 miles North of the Adriatic. East of the Swiss frontier, the whole northern slope of the Alps drains its waters into the Danube by a succession of streams, viz., the Iller, the

Wertach, the Lech, the Isar, the Inn, the Salzach, and the Enns. Of these, two only run for any considerable part of their course parallel to the main range; the Inn and the Salzach. At the western extremity of the valley of the Salzach, the main chain widens out into an enormous mass; the chief peak of which, the Grosser Venediger, forms a kind of obelisk, that marks the natural and geographical division of the southern slope of the German Alps. In exact correspondence with the separation of the old Roman provinces, the boundaries of which are still retained in the names "Rhætian" and "Noric" Alps, this great block is the watershed of the southern streams of the general Alpine ridge, which flow eastward into the Black Sea, westward into the Adriatic.

On the northern side of this mass begins the Salzach; into the first half of which, as it flows eastward, there tumble, at right-angled intervals, almost as regular as the successive rungs of a ladder, a series of torrents, coming due northward from the mighty watershed of the Noric Alps. And opposite this point rises the mass which culminates in the Gross Glockner.

East of the Glockner, the main ridge of the Alps is for the most part narrowed to a snow-belt, of one or two miles in extent from its northern to its southern limit. But, about forty miles from the great mass of the Glockner, the mountains tower once more, and the snow limit widens to five or six miles around the Hoch-Alpenspitz; which, with its neighbours the Hafnereck and Sonnenblick, may be almost regarded as the last outposts of the army of these Alpine giants; and eastward of which, the central chain bends northward towards the Radstädter Tauern as a range of mountains of comparatively subordinate import and size. West of the Glockner, the glacier-field contracts to a narrower limit at the Kalser Tauern, beyond which

it again expands into an irregular field, averaging about three miles in width, of which, as usual throughout the whole Alps, the smaller portion lies on the steep southern declivity. The continuous surfaces of snow and ice thus isolated by the Heiligenbluter Tauern on the E., and less exactly or constantly by the snowy *firn* which usually covers the Alter or Velber Tauern on the W., may be



THE GROSS GLOCKNER FROM NEIGHBOURHOOD OF HEILIGENBLUT.

a Ketterberg. *b* Hohenwartkopf. *c* Gross Glockner, the first or topmost peak having the second foreshortened, below it. *d* Romerlskenwand. *e* Johannisberg. *f* produced horizontally, strikes the crevasse at the foot of the second peak.

estimated as having a total area of not much less than 150 square miles; an extent which suggests some doubt whether the scenery of the German Alps can rightly be regarded as on a small scale, even when compared with Switzerland.

After a few short excursions in the Bavarian highlands, I hastened to Innsbruck, and travelled the same afternoon down the Inn valley to Woergle, thence striking eastward along a post road to Hopfgarten; whence, early next

morning, I made use of the last hour or two of decent weather by ascending the Hohen Salve, a kind of German Righi, which has a height of about 5,870 feet above the level of the sea, and commands one of the widest panoramas in all this mountainous region.

Three days of travelling in continuously wet weather brought me to Wildbad Gastein; where, on the following day, the weather cleared, and left the summits of the surrounding mountains promisingly covered with snow. A walk or two in the neighbourhood filled up a couple of mornings. Another day saw me over the main chain of Alps ascending the Herzog Ernst on the way to sleep at Döllach in the Möllthal. The next morning I breakfasted in Heiligenblut, a few miles higher up the valley, and in view of the Gross Glockner itself.

2. THE ASCENT OF THE GROSS GLOCKNER.

BY WILLIAM BRINTON, M.D.

IN spite of two sleepless nights, I was afraid to postpone my excursion, and felt that in such fine weather, it was better to count upon a nap at the Ochsenhütte, where it is usual to halt on the way up the Glockner. So after lounging away the remainder of the forenoon on the hill side above Heiligenblut, and dining at the inn there, I started at 2.30 P.M. with one of the guides, who was to carry the necessary provisions until we picked up the two others on our way.

The afternoon was close and sultry, and the air in the valley perfectly still, so that we took our time up the path which, after crossing the Möll torrent, half a mile or so above the church, ascends the terrace on its right, to turn the projecting shoulder of the Krockenberg, a mountain at the opening of the Leiterthal, a western tributary of the main valley. Shortly before crossing the Leiterbach, at a point a little above the waterfall by which it joins the Möll in the main valley, we were reinforced by the two other guides, and entered upon the Katzensteig, a good though rather rough path, often some two or three hundred feet above the torrent, and on its left bank.

The danger and difficulty of this stage of the ascent have been greatly exaggerated: only one or two places presenting any excuse for the use of hands as well as feet. By and by the steep ridge on the right hand of the path

lowers, the valley opens out, and reveals, a little above the bed of the torrent, a couple of huts which are to afford us our night's lodging.

An easy stroll, in a blazing afternoon like this, scarcely deserves any notice, as regards the time which it has occupied. But what between walking slowly, and halting to give the neighbourhood a careful scrutiny, exactly two hours and a half had been occupied in the march from Heiligenblut.

The *Sennerinn* was away, but we soon discovered her on the mountain side getting grass, and a jödel or two brought her towards us.

Meanwhile sunset approached, and lit up the steep overhanging foot of the Kleine Fleiss Gletscher far off on the other side of Heiligenblut, with a gorgeous rose-coloured light that placed its icy mass in such vivid relief against the deep blue vault overhead us, as apparently to bring it within a tithe of its real distance.

Time slips away quickly on the mountain-side; and the approach of night sent me to my hay-loft; where, rolled up to the neck in a plaid by one of the guides, and then covered lightly over with fragrant hay, I was soon fanned to sleep by numberless delicious little breezes, which crept under the shingles of the roof, and played upon my face with a sedative effect which I could not help thinking a vampire would hardly have surpassed. On the other side of a partition behind me, the guides and the *Sennerinn* kept up a conversation over the fire in the body of the hut; a talking and laughing, which to my ears gradually became disjointed and amorphous, and finally dissolved into dreams.

By and by I awoke, with a clear perception that the limitary hour of 11.30 P.M. which we had assigned ourselves had arrived. The air smelt of midnight; the whole

Alm was perfectly still. But in a minute or two, there came a slight stir in the hut, a raking of the embers, a knock at the door, and our day had begun. A couple of tumblers of excellent "*café au lait*" were soon despatched, and we started at 12.15 A.M. for the Gross Glockner.

The night was chill and dark; though starlit, and almost cloudless. What little air we found moving came down the valley towards us. The roughness of the path obliged us to take lanterns.

The Sennerinn sends us her blessing, as we march out into the darkness, plunge down the hollow, and cross the plank which leads over the torrent to the path on the other side. At first no one speaks, the silence around is unbroken, save by the dashing of the torrent beneath.

By and by the moon rises, and lights the scenery around us more distinctly. And so we go up and up the Leiterthal, until at length we come to a huge boulder, which marks what was formerly the lowest part of the side moraine of the Gletscher. Under this friendly roof we sit down to divide our store of provisions into three portions — one which each of us carefully stows away precisely in his centre of gravity, at a point (as is well known to physiologists) lying just in front of the vertebral column, and behind the lowest button of the waistcoat; one which, with the kraxe or basket, is left under the boulder to form our dinner on returning; and a third which is carried in a scrip by one of the guides.

Rising to pursue our way, the wind comes down upon us from the mountains over the Gletscher, and hustles us roughly, besides blowing out our lantern once or twice. But soon we climb the sloping foot of the Gletscher, and proceed to put on our Steigeisen or crampons, as well as to tie ourselves two and two, with an interval of some twenty or thirty feet of rope between the attached friends. These

precautions taken, the file again advances, keeping steadily up the glacier towards its central part, where, to the left of the saddle over which we have to pass, the Gross Glockner itself has just come into sight. After crossing a few crevasses, the approach of dawn enables us to dispense with the lantern.

By and by, still going up the glaciers but inclining towards the eastern side, we approach the ridge which descends from the Kellerberg and encloses this side of the Gletscher, mount a steepish slope of snow, and another incline of *Geschütt* of about the same angle (40°), and come out on the *Hohenwartscharte*, a *Joch* or saddle between the Kellerberg and the *Hohenwartskopf*. We have thus completed the second part of the ascent, and climbed the ridge of the Glockner some 6,500 yards to the S.E. of this peak itself, and at a level of about 2,000 feet below its own height.

The view from this point over the *Pasterzen* * *Kees* and the *Leiter Kees*, east and west respectively, well shows the great difference of level between these glaciers on the opposite sides of the Glockner ridge. The height of the terrace from which the *Leiterbach* breaks into the *Möll*, the length of the curved *Leiterthal*, and its steady gradual inclination upwards to within a few hundred yards of the *Hohenwartscharte*, are precisely the reasons why it forms the route up the Glockner, as well as why, looking down hence towards the *Pasterzen Kees*, you see a smooth rounded surface of snow cutting across the line of sight so as quite to prevent any glimpse of the base of the declivity; and showing, in the few yards visible, not only an ugly crevasse or two, but an inclination such, that the

* In the Noric Alps a glacier is called a *Kees*, literally a *cheese*, from its coagulated or curdy appearance.

thought of descending it, even with crampons, makes the soles of your feet tingle.

From the Hohenwartscharte, our course henceforth was north-westerly, on the eastern side of the ridge. Leaving on our left the projection of the Hohenwartskopf — which, though 380 feet above the ridge, seemed little more than a knoll of snow surmounted by rocks, — we passed carefully along the rounded base of the mountain, over snow-fields of variable consistence, but, in the main, neither so soft as to be heavy walking, nor so hard as to be dangerously slippery. In this course we necessarily avoided most of the crevasses which run parallel to the ridge, and mark the sudden increase in the steepness of its eastern slope down towards the Pasterzen Kees. The depth of the *firn* here is of course a matter of the merest conjecture. But I should imagine, from the generally shrunken condition of the glaciers in this region during the protracted heat of the summer of 1861, as well as from the arrangement of the broken edges of the snow-layers on other parts of this ridge, and from the protection which its shape and direction afford this side against direct solar rays, that the *firn* on this ridge is always deep enough to cover the ragged rocks beneath it for a depth of some twenty to forty feet.

We now trudged onwards and upwards over the slope (the fall of which on either hand gave a full view below, with little or no peril), until, first passing along the eastern edge of a long ridge (or rather parallelogram) of rocks, which here forms the crest of the mountain, and then exploring their middle, we reached the Adlersruhe, where we had decided to call a halt and prepare for the final ascent.

The Adlersruhe (Eagle's Nest) is a point which lies near the western edge of the jagged mass of rocks here forming

the crest of the mountain, and is occupied by the remains of a hut, said to have been built by Prince Salm in 1800, at the time of the first ascent. Our guides suggested for it the name of the "Glockner Hotel," or "*Gasthof zum Alten Mann*;" and we agreed that visitors would find the charges moderate, with no extras, and all wines carefully iced by the landlord himself. The want of roof, door, and windows, and the difficulty of access, are, however, drawbacks. It is stated that the whole hut once disappeared for some years together, being completely covered by the glacier,—I presume by the *firn* descending from above. But judging from other accounts, it seems quite as likely that its concealment was effected by the winds heaping up a snow-board (*Schneebrett*) from the western side. However this may be, the position is evidently much too exposed to form a good post of continuous observation.

By the time we had reached this shelter, the wind was blowing quite hard enough to make it a pleasure to sit down under the lee of its low walls for a few minutes. Soon, however, we quitted it, and left the rocks once more for the open snow, the rounded surface of which, as before, formed the highest part of the ridge, and commanded the valleys on either side. Looking down on the left, for instance, we saw a vast compartment of the glacier, separated from the mass further south by a kind of rocky rib, which sank down towards it from the rocks we had just left, and only subsided where the descending slope of the glacier turned an angle to join the branch of the glacier we had ourselves climbed by. And, to my great delight, two tiny black specks, which, though conjecturally some mile and a half distant, looked to my straining sight too flat, too uniform, and too isolated for rocks, began, just as I was gazing at them, a perceptible

movement, that made me no longer hesitate to pronounce them unmistakable chamois. Great was the amusement of the guides at what they fancied an effort of the imaginative enthusiasm common to tourists, and nothing but my having a telescope at hand would perhaps have convinced them. These graceful creatures were trotting lightly and cautiously over the glacier, apparently quite unconscious of our presence. That we should not have been seen by them is intelligible enough, forming, as we did to their view, four small black dots against a blazing white snow-field, and near plenty of rocks not very unlike us in shape and size. But considering that we were laughing and talking, and that the wind was blowing hard from where we stood in their direction, it did seem as though either their senses of hearing and smell were casually blunted by the pre-occupation of crossing the dangerous glacier, with its crevasses hidden by snow, or that the wind which howled about our ears failed to dive deeply enough into the valley to reach them. On raising our voices to a shout, they stopped short and looked suspiciously round, but without seeing us. A second shout exposed us, and after a single glance they broke into their light swinging gallop, the largest (a buck) going first, until they were speedily lost behind a projection of rock.

After this momentary interruption, we stepped out briskly up the snowy ridge; from whence, looking towards the N.E., we saw the sky,—elsewhere bright enough, here of a very ugly dun colour,—suggesting the approach of even a stronger gale from that quarter than we were now experiencing. On it came, indeed, quickly enough, to the disgust of the guides, who spoke of it spitefully as a "*Salzburger Wetter*," coming from a quarter which in this region generally proves a stormy one, devoid of all the

urbanity one might expect in a visitor from the capital city of the province on this northern side of the mountain. Harder and harder did it blow, until we fairly leaned towards the eastern or Pasterzen slope, to avoid being blown away. All of a sudden came a series of smart cuts against my face; and on looking to windward, with a schoolboy's sense of injury at the unfair hardness of this variety of snow-balls, I saw a whole flight of flat white-looking things, which rose from the rounded shoulder of the mountain some distance below us, and came skimming upwards on the wind. Not wishing to be cut dead, I discreetly turned away my face, but managed to catch one or two of them with my hands in passing. They were plates of ice, of one or two lines in thickness, and several inches in surface, delicately skimmed off the top of the firn by these tremendous blasts of wind, and set whirling at a pace which really made them dangerous to the face and eyes. By and bye, when these strange travellers had all hurried over the ridge out of Salzburg into Tyrol, and any further liberation of such ice-plates seemed to be prevented by the greater cohesion and softness of the now denuded firn, the wind increased so greatly in violence, that there was really nothing for it but to lie down on the snow during each blast; and it seemed almost a question whether the steep ice-slope, up which we should have to hew our way as the next stage of the ascent, could be attempted at all. However, a little patience soon mended matters. The "old man," apparently satisfied with our repeated prostrations before his throne, relented; the wind gradually lulled; and by the time we had reached the foot of the steep incline that begins the peak of the Glockner, there was no wind more violent than promised just to season our climbing with an additional motive for keeping our toes in the steps—if, indeed, we did not escape the blasts al-

together by the inclination of our ice-ladder to the western or leeward side of the peak.

The cone which, bifurcating at its summit, forms the two points of the Glockner, starts from what I believe to be a constant crevasse, that passes almost transversely across the ridge along which we had ascended from the S. The crevasse itself I could distinguish from Heiligenblut with the naked eye: so that it is justifiably indicated in the sketch (p. 444) from this place. In our ascent we found it about six or seven feet wide, its northern edge being about five feet higher than its southern one. But a tongue of ice near its middle offered an easy jump, and a single step cut in its upper margin made its further transit safe enough. Henceforward we ascended by hewing a series of steps, which, carefully placed for the right and left foot alternately to the number of some two or three hundred, took us up the ice-slope that led, with an angle of 50° , to the second peak.

The second peak, so called because it is the first arrived at, is a part of the general ridge, about 200 to 250 yards to the S.E. of the highest peak, and about fifty feet lower. Its summit, nowhere quite level, is wide enough to allow a group of a dozen people to stand upon it. Our stay here was short. Looking well to our ropes, we climbed down a steep slope, apparently consisting of large blocks of rock, of which the interstices were here and there snowed up into continuous walls and flats of snow, like a series of gigantic steps. In bad summers, this steep and treacherous snowy surface is sometimes scarcely to be passed, save by slinging the tourist down the single declivity into which these steps have then been transformed. We found it easy enough, the amount of snow being probably at its *minimum*. On reaching the bottom of this slope, we found ourselves on the southern brink of a picturesque-

looking chasm, which cuts athwart the ridge, and is traversed only by a beautiful slender edge of snow, to right and left of which the slope of the mountain on either hand seems scarcely less than 65° , 70° , or 80° ,—in fact little better than a precipice. The length of this snow-crest is estimated in Baedeker's Handbook at 60 fathoms; but I should judge that it scarcely exceeds as many feet. Its width, until trampled out, is *nil*,—a mere edge of snow, which, like the mythical bridge (*Al Sirat*) that leads to the Mahometan paradise, can only be traversed in safety by those accustomed through life to walk uprightly. Not having the post of honour, I found it already a respectable track of some six or eight inches in width, when I crossed. However, my transit seemed the completion of a kind of graduation in the eyes of the guides, who thereafter allowed me to climb up the broken rocks which rise at an angle of about 60° , from the northern end of this snow-ridge to the highest peak, and even permitted me to retain my alpenstock in one hand, and climb exclusively with the other. In a minute or two this final ascent was effected, and the summit was won.

It was now 6.45 A.M.; so that we had been exactly six and a half hours in ascending from the Leiterhütte. In addition to various short halts, we had made one or two serious assaults upon our food,—assaults which, even when I could not aid in them, it was pleasant (not to say tonic) to look upon. Nevertheless, the guides assured me that they had never before gone so quickly, or reached the summit so early.

Doubtless we had been somewhat favoured by the weather. But on the whole, I suspect that the slowness of many of the previous ascents was due neither to the weather nor to the guides; and venture to predict that, with fewer guides, and a smaller burden of provisions, some

of my countrymen will hereafter make this ascent in as little as four and a half or five hours from the Leiterhütte.

No reader expects me to describe what we saw, or even to record my impressions. But I think that a tall peak, which a pedestrian has never ascended before, generally gives him an impression, as he gains its summit, of being suddenly carried there, as though into another world. The vast panorama leaps into the eyes and sinks down deeply into the brain, there to remain (it may fairly be hoped) for a lifetime. So delightful is this feeling that, even supposing the last few hundred yards of ascent do not demand undivided attention,—even if the peak do not shut out the coming prospect, or the continuous watchfulness over hand and foot,—the careful scrutiny ahead for this little edge of rock which is to be grasped by the fingers, or of that little fissure which will first receive the toes, equally forbid all further prospect,—I suspect the wary pedestrian rather defers than anticipates his pleasure. And then, on reaching the summit, as he turns round to all points of the compass, and everywhere sees the giant forms of the surrounding mountains,—a stately company of hundreds and thousands, sitting in open ranks, that fade away in apparently endless perspective,—it is only in a geodetic sense that he looks down on them. Mentally, indeed, he wonders and reveres, like the dazed Gaul on entering the Roman senate; and since the rarity of human footsteps in these solitudes sets him speculating as an involuntary antiquarian upon previous visitors, he feels little surprise that our heathen predecessors on this earth worshipped in high places, or roamed with Bacchus on the mountains.

After all, the best way to convey an impression of the Gross Glockner is to describe it as being, not a “specular mount,” with a wide view like that from the shoulder of the Monte Viso, over Italy, but rather the topmost of a

throng of peaks; — an assembly of giants, towered over by a chieftain, himself taller by head and shoulders than them all. Plains and cities are almost wanting, save in the rarest and clearest weather. Mountain peaks, deep valleys, distances of incredible perspective, sky and cloud of all imaginable hues and consistencies,—these are what I saw.

From the northern to the western point of the compass rose darkly against the sky, about seventy miles off in a direct line, a host of familiar forms of various mountains in the Bavarian Highlands, from which many a time had I gazed away a long summer's day, sweeping with my telescope over the very peak on which I was now standing,—the Halsl Spitz, the Planberg, the Risser Kogl, the Roszstein, the Uunütz, and others. The quadrant ranging from the N. to the E. was still sailed over by occasional clouds, through the breaks in which, however, were seen the well-known outlines of the Tannengebirge and the Uebergoszene Alp, cloven into two enormous masses by the valley leading to Salzburg, and, to the left of these, the Steinernes Meer and the Watzmann. On the south-east came the Goldberg group; among them the Herzog Ernst, which I had climbed two days before, and the Hochnarr, which I climbed two days after, both respectable mountains, each of ten or eleven thousand feet in height. To the S. lay the Italian Tyrol, and to the W. the chief peaks of the Rhætian Alps, all still rosy with the dawn, and sharply defined at distances which, in the case of the Wild Spitz in the Oetzthal, and the Orteler Spitz, respectively attain 115 and 130 English miles in a direct line. Nearer still were the Gross Venediger and the Drei Herrn Spitz, placed at the head of the Ziller Thal, as the bounds of the Noric and Rhætian Alps, which latter mountains seemed to shut out the view of some of the higher Swiss Alps, and especially of the Bernina. Of the valleys, the most noticeable, after the

vast field of the Pasterzen Kees below us on the E., were those of the western declivity: the ravines of the Ködnitz and of the Teischnitz Bach from the glaciers on this side of the Glockner, tributaries of the Dorfer Bach, which occupies the long valley that runs southward under the Glockner range from the Kalser Tavern; and beyond this the parallel valley which runs down from the Velber or Matreier Tauern, and which, where its southern end opens out to receive at an angle the Isel Bach from the W. is occupied by the village of Windisch Matrey.

But even mountain ascents have solemnities which seem to claim observance before an undivided attention can be given to the scenery. Eating and drinking, in however small a quantity, are acts which seem to propitiate the "old man" towards his visitors. And after we had duly fulfilled this routine, and drank to each others' health, I could do no less than evince my proper feeling of affiliation and respect towards the club of which I have the honour to be a member, by drinking the health of its president. The toast, briefly introduced, was duly responded to: the "Gesellschaft der Bergsteiger" excited much interest, and a very few words descriptive of the courage and experience of its president evoked the enthusiasm of these sympathising mountaineers: so that we shouted out, "Es lebe der Herr Ken-neh-di," with all the honours due to his office, at a level of about 13,000 feet above the sea. Then came another and very different ceremony, never, I believe, omitted by the guides who accompanied me, and so perfectly in consonance with the simple piety of the Tyrolese mountaineer, that it did not strike me as at all unusual. All three knelt down and repeated a short series of prayers, which, so far as I could identify the Latin, seemed to be the "rosenkranz," or rosary that forms the morning prayer of the peasantry of

these valleys. When this had been reverently concluded I rummaged the small field of snow and rock which formed our domain for a couple of tokens, mineral and vegetable, of my visit—finding the one in a small piece of quartz, the other in a lichen, which I scratched off one of the topmost blocks of the pinnacle. Then came another long circumspection over the scene; and at last, after about half an hour of this prospect, the extension of the Salzburger Wetter on the north-east into a dark twirling storm of snow, with misty edges, driven by a wind with a violence bordering on a hurricane, suggested to us that it might be safer to beat a retreat. So we struck our camp, bade farewell to the “old man,” and began to descend.

We go down the crag of the topmost peak, across the knife edge of Al Sirat, up again to the second peak, and down our ice-steps to the landing. The “old man,” indeed, not only followed us to the bottom of this his staircase, and over the crevasse which forms his threshold, in the shape of a howling wind, and a few tears of melting snow, but, arrived here, his hospitable feelings fairly overmastered him, and he fell on our necks as a tremendous gale, which, in its enthusiasm, quite got the better of us, and all but blew us over the western ridge down the glacier into Tyrol. Here, indeed, occurred the deplorable accident of the excursion. My hat, which I had carefully chosen years before to be comfortable and unobtrusive among its kindred in the Bavarian Highlands, I had cautiously tied on with a string, and, fully confiding in the strength of its attachment, had allowed it to nod its recognition of the attentions of the vagrant wind: when, to my horror, a sudden gust tore it from my head, leaving pendent from my button-hole the string and ribbon. The reader will judge my feelings when

I saw a conical green hat, the companion of so many excursions, revolving with frightful rapidity on its own axis while it careered madly over the smooth snow-slope, down towards the glacier, at a rate of twenty or thirty miles an hour. In an instant I was left desolate, to meditate gloomily over the mutations of the fates, and especially to question destiny why, in all ages and countries, they who sew on buttons and ribbons never sew them on aright. Of course all recovery of the lost hat was hopeless. Doubtless it either rolled into a crevasse, or drifted on to some ledge of snow, to form an exhibition for all the vagrant *gemen* of the neighbourhood. A handkerchief, covered by a night-cap, which one of the guides fortunately had inside his hat, replaced it for the time. As the sun soon came out hotly enough, I was somewhat in dread of* snow-blindness, yet this, like most of the evils we expect, did not come; and we made a swift and easy descent, after calling at the Adlersruhe again, down to the Hohenwartscharte, and thence descended the Schrund and Gletscher to our store of provisions under the boulder.

From the Ochsenhütte, we rapidly descended the Leiterthal into the main valley, and reached Heiligenblut about 2 P.M. Here the landlord kindly relieved my anxieties, by transferring to me a most respectable new hat, whereunto a tailor at work in the common room of

* It is, however, generally agreed that the unrelieved and monotonous white expanse of snow and cloud on a cloudy day is far more provocative of snow-blindness than the glare of the sun on a bright cloudless day. But it is very questionable how much of this result is, really in the eye; how much outside the organ, in the moist membrane which covers it and lines the lids. And it is certain that the stratum of cloud modifies both the heat, and the vapour, of the air between it and the snowy surface to a degree that might well account for the resulting inflammation, in which the skin of the face and mucous membrane (*conjunctiva*) of the eye often concur. It is interesting to notice that, in the hot vaporous air of the Japanese Ocean, the effect of cloudy weather in burning the face has been recently noticed (Maury's Geography of the Sea).

the inn affixed the green ribbon of my old one, and so toned down its otherwise too episcopal character. Thus once more equipped for travel in what I really believe was the only new hat within thirty or forty miles, I was able to stroll about the village, and gaze, insatiable, at the scenery around, before spending a delightful evening in the society of the German *savants*—two or three of them of the highest eminence—whom the parlour of



THE CHAMOIS SPIES MY HAT.

this unpretending inn generally contains at this time of the year. Still, however, not the evening, nor the long Sunday of comparative rest which I intercalated between this ascent of the Glockner and a far more difficult excursion on the ensuing Monday, could get my poor hat out of my thoughts. Whether it went down a crevasse; whether, if so, it was destined to turn up again; in how many years; how many yards off; how far bereft of such separable accidents as form and colour it would re-appear

when the "*Kees reinigte sich*," or cleansed itself, by a slow disgorgement, of such indigestible food, remains an open question.

NOTE. — I must acknowledge the obligation I am under, in the compilation of the map, to that published by Dr. Keil of Lienz.

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